THE OIL WEEKLY

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The Oil Man's Calendar

MAY 13	Independent Petroleum Association of America, Semi-Annual Meeting of the Board of Directors, San Antonio.
19–22	American Petroleum Institute, Mid-Year Meeting, Tulsa.
26–29	National Association of Purchasing Agents, Chicago.
29–31	National Oil Scouts & Landmen's Association, Dallas.
JUNE 7	Illinois-Indiana Petroleum Association, Robinson, Illinois.
9–10	Liquefied Petroleum Gas Association, Pacific Coast Section, San Francisco.
16–20	American Society of Mechanical Engineers, Petroleum Division, Kansas City, Mo.
19–20	Pennsylvania Grade Crude Oil Association, Bradford.
20–21	Kentucky Oil & Gas Association, Mid-Year Meeting, Lexington.
SEPT. 8–12	American Chemical Society, Atlantic City.
17–19	National Petroleum Association, Atlantic City.
NOV. 2–7	American Petroleum Institute, Annual Meeting, San Francisco.

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THE OIL WEEKLY

VOLUME 101 — MAY 12, 1941 — NUMBER 10

The Changing Panorama

GRANTING of permission for the Cole oil committee to delay its report of investigations until January 3, indicates that Congress does not believe there is an immediate need for federal control. While this action last week was extremely pleasing to the industry, even more soothing and perhaps indicative were some of the comments lauding the progress and achievements of the industry.

At long last words of praise for the oil industry may be found in the official Congressional Record along with the many indictments of petroleum that have been recorded there in recent years. Congressman Charles A. Wolverton (New Jersey), member of the Cole committee, after commenting on the amazing progress in conservation and utilization of petroleum, declared "Advancement made in all branches of the industry has been so great that it is almost unbelievable. Suffice it is to say that our [the committee's] observation of what the oil industry is doing, and is prepared to do in behalf of national defense gives assurance and courage to all who are interested in our national security and defense. The oil industry can be depended upon to do its patriotic part in fulfilling whatever task is laid upon it in the days that are ahead."

While short, Wolverton's comments were forecful and are encouraging to the industry.

Mistaken Patriotism . . .

Some concerns engaged in industries vital to the national defense program have adopted a strict policy of refraining from seeking draft deferment of their employes. Included in this group are some oil companies, who have permitted "key" men to be drafted into the army without complaint. They feel that it would be unpatriotic to interfere in any way or in any degree with military plans.

There is, however, another and very different side to the picture, which has been expressed clearly by *Mining and Metallurgy,* publication of the American Institute of Mining and Metallurgical Engineers. An article in this magazine states:

"Modern warfare—and whether we get into the war or not, the present effort is to be prepared to wage war—depends as much or more on material as on man power. The production of needed raw materials, the manufacture of thousands of things, from mess kits to battleships, needed to equip fighting forces, on a scale never before heard of, will require qualified technologists and engineers in tremendous numbers. It follows that the demand for men specially trained and experienced along these lines will be greater than ever before. No blanket rule for the deferment of all individuals in any group is desirable; but it is argued that the officers of an employing corporation can judge whether or not it will be possible to replace with reasonable facility a potential draftee occupying an engineering or technologic position • • • In such circumstances, it is contended that the employer not only might, but properly should, urge deferment for an individual as strongly as he can. In fact, it is argued that to refrain from doing so would be a distinct disservice to national welfare."

Chemical Product Growth . . .

New chemicals, plactics and synthetic rubbers have been introduced to the market in a steady stream since 1930, and full 50 percent of these are associated with the petroleum field. Thus, a highly diversified American chemical, plastic and rubber industry has been developed. Mention of just a few of the items being made from oil and natural gas would include: cloth coatings for umbrellas and raincoats, artificial silk, toothbrush handles, combs, belts, suspenders, shower curtains, draperies, bathing suits, stockings, many different kind of rubbers, gaskets, cable sheathings, auto steering wheels, light shades, lenses, shatterproof windows, light reflecting surgical instruments, explosives, printing ink, tobacco humidifying agents, laminated wood veneer, ammonia, insecticides, fumigants, mirror frames, alcohol, solvents, pharmaceuticals, toilet preparations, adhesives, dyestufs, wetting agents, detergents, dewaxing agents, photographic chemicals, anti-freezes, metal lacquers, etc.

Rumor . . .

Mexico is reported to have "made up" with England and to have sold all of her crude oil output, over and above her domestic requirements and her commitments to two American companies made some time ago, to England. Nobody is quite sure what the deliveries could be. While the report has not been confirmed by THE OIL WEEKLY it looks a little bit peculiar that England does not draw more heavily from the Shell's properties in Venezuela which are capable of tremendously increased production.

Cores . . .

United States airplane production continues to mount—1427 in April. From now on it is expected to show a monthly increase of 250 planes per month for several months until the peak will be reached. What the peak will be is not stated, but it could be better than 5000 per month • • • Crude oil market remained very firm and an increase in price in the Mid-Continent would be no surprise to anyone. In fact, it will be surprising if such an increase, amounting to as much as 12 or 13 cents per barrel, does not come shortly.

EDITORIAL

THE OIL WEEKLY
MAY 12, 1941
Vol. 101 No. 10

Priorities For Oil Equipment

A MISUNDERSTANDING seems to be prevalent in official Washington with reference to the operations of the oil business. Possibly the general feeling in the industry that the petroleum industry can take care of whatever demands may be made upon it is responsible. Possibly official Washington and the public has gotten the wrong idea from the statement which has been attributed to some, that a quarter turn of the valve will flood the country with oil indefinitely.

This misunderstanding at Washington can easily damage the efforts of the oil business to supply the needs of our country and allies, unless corrected. The mistaken idea has been translated into the thought that, simply by opening up wells, we have the answer to the country's needs for a long time to come.

Actually, the two surveys which have been made on the subject of the nation's ability to produce, one by the Army-Navy and the other by THE OIL WEEKLY, have been in agreement that the production of the country could be increased by better than 800,000 barrels per day, almost over-night if transportation is available for it, without damage to ultimate recovery. But neither the committee which prepared the survey for the Army-Navy nor the people who co-operated in THE OIL WEEKLY's survey, had any idea of an oil industry operation which did not contemplate continued drilling. The immediate increase possible was to take care of a sudden emergency, with the thought in the minds of all who know anything about the oil industry that production cannot be sustained, new reserves opened up, without drilling, nor can pumping wells be pumped without equipment.

In World War No. 1, when Petroleum was equally important, but much more scarce, the government immediately recognized that there must be a flow of oil-country equipment to find and produce the flow of oil needed. Priorities on such equipment came quickly. At the present time it is the policy of the officials at Washington not to create priority on oil-country equipment, but to follow a policy of specific priorities for specific companies engaged in national defense manufacturing. One manufacturer of an important piece of oil-country equipment has received a specific priority on a very scarce product, but only after making a special presentation of its needs, involving a brief on the general situation and more than a score of affidavits from oil men as to the necessity of the product.

Last week we heard of a chain manufacturer who could not make delivery on an oil-country chain order because he could secure no priority on the alloy steel for that purpose. If this manufacturer does the same as the other manufacturer we have mentioned, and every other manufacturer of oil-country equipment follows a similar policy, as is now necessary under the present set-up, much waste motion will result.

It would seem that a general brief for the entire oil-country-equipment industry could be prepared as a basis of certain general priorities, and save not only lost time, but prevent the industry from being strangled by failure to secure supplies with reasonable promptness.

The inpending demand for petroleum products in the Americas will unquestionably be greater than many people expected. The war may be long drawn out. Certainly it is nothing but common sense for this nation to *continue,* for an indefinite period the present state of preparedness of the oil industry. Not only must equipment be made available for the drilling and pumping of wells in the United States, but also in South America and other sections of the world, now under anti-Axis control.

Changes in the

International Oil Map

By RAY L. DUDLEY, Publisher

IMPORTANT changes have been made in the petroleum ownership map of the world since the 1940 International Number of THE OIL WEEKLY was published. And as this issue goes to press, still more important changes are pending.

The changes which brought Hungary more closely into the Axis fold were imminent a year ago. Poland already had undergone the change. Austria was safely (for Germany) within the Axis embrace. The small fields of France were then but a few weeks away from the transformation, but Roumania seemed definitely anti-Axis, and firmly in control of her own properties.

Today Roumania is under Axis control, and the production has mounted rapidly under a method of operation which has for its goal more oil without regard to the effect on the properties.

Germany's present supply of crude and synthetic mineral oil is now rated at 322,000 barrels daily, including the production of Germany, Roumania, Poland, Czeckoslovakia, occupied France, Austria and Hungary.

As the past week opened, reports were current that the Iraq oil flow to Britain had stopped, and the signs were pointing to still another oil area—the Baku fields of Russia on which Hitler has his eye.

Obscure reports of Nazi activity in Iran, the inevitable forerunner of German efforts to gain control, have appeared in the press within the past ten days. Is Iran also on the list of those countries planned for Axis control?

What Germany really is aiming at has already been laid down in black and white. In an article in the German publication *Wirtschaftdienst*, issue of July 19, 1940, after reviewing the petroleum situation in Europe and the Near East, in which oil fields of Iraq, Iran, Saudi Arabia, Bahrein Island and U.S.S.R., were referred to, Dr. Hans Bahr of Hamburg, Germany, said:

"The Near East and the U.S.S.R. are accordingly the two naturally-given areas to supply mineral oils for the European Block . . . "

THE OIL WEEKLY of February 10, 1941, published an English translation of the article in full.

In that article, which evidently envisaged England still as a free country, England's participation in the petroleum supply of the Near East was deliberately written out, and England had assigned to her the sources of supply in the Americas.

Thus, if German arms and diplomacy are successful, it is well within the realm of possibility, even probability, that before another issue of The International Number of THE OIL WEEKLY goes to press next year the oil map of the world might be further changed to embrace Iraq, Iran, Saudi Arabia, Bahrein Island and the Russian Baku fields, as being under Axis (actually German) domination.

That such a change cannot be accomplished without a gigantic struggle is apparent. Whether or not it happens depends, it appears, entirely on the efforts to oppose it by England and the United States.

The situation which has come about by reason of the changes already made, directly affects the petroleum industry in the United States and other countries opposed to German domination. President Roosevelt's call for tankers is one result. A probable increase in demand from both North and South America is another likely result.

True, the British have been getting only a part of the production of Iraq. The main pipe line has a capacity of 84,000 barrels a day, but it branches before reaching the coast with one branch going to the French port of Tripoli and the other going to Haifi from which point England has been taking oil by tanker. Conceivably, this supply could be cut off and England still take care of her needs from Iran, Saudi Arabia, and Bahrein Island. The properties in Iran are owned by the Anglo-Iranian Oil Company, while Saudi Arabia and Bahrein Island properties are owned by American oil companies under joint agreements with the sovereign governments in each country.

Danger to shipping in the Mediterranean has already diverted much of the tanker movement which formerly passed through that great sea. Oil has been

moving around the tip of Africa. That this is well known to Germany is indicated by the attacks on such shipping made by German submarines. The route around the southern tip of Africa is 11,000 miles from point of origin to England. From the sources of supply in North and South America the distance is only about 4000 to 5000 miles. However, England has preferred to use Iranian oil, if possible, because of the scarcity of dollars with which to pay for North or South American petroleum. The Lease-Lend Law has helped to cure that trouble.

Dr. Bahr, the German quoted in a foregoing paragraph, made no mention of Japan in the German world petroleum set-up. Japan, which aspires toward Asiatic domination, as Germany aspires to European domination, needs oil desperately. And like Germany, Japan holds to the theory that what a nation needs it must get, even if it takes it by force. Approximately one year ago, a Japanese mission visited the Netherlands East Indies, the trip coinciding with the German blitzkrieg of European Netherlands. The mission wanted to get oil. It could not understand that under a democracy, the government could not take oil from its citizens and sell it or barter it to another country. The mission failed, but Japan does not seem to have taken eyes off the East Indies, even though Japan has not laid hands upon that area.

In the meantime, American oil has been going to Japan, but as time has worn on it has gone, month after month, with greater restrictions. First, actual aviation gasoline was barred. Then came the purchase of high-octane "motor fuel" which, by addition of lead, could be brought up to low-grade aviation gasoline specifications. The United States government was perfectly aware of what was going on and raised no apparent objection to such sales. Much of the refined products were moving in steel drums. In February, 1941, shipment in drums of petroleum abroad, except to England and her allies, was forbidden. Exports then fell off.

In the meantime Japan pushes operations at home, on Sakhalin Island, and in Manchukuo, handicapped by the American embargo on drilling and pumping equipment, put into effect several months ago.

Russia, under the shadow of German aggression, probably is not producing more than national requirements, although reports occasionally are heard indicating some shipments of aviation gasoline or lube oil to Germany. Russia had a large drilling campaign planned. The Soviets have bought more American equipment for drilling during the past 18 months than ever before. It is reported to have been paid for, some of it shipped and the balance held up under a government embargo.

Despite the embargo on equipment, the United States government has offered no opposition, until a week ago, on the movement of gasoline from California to Vladivostok, the Russian Siberian port near Japan. However, this supply has now been cut off. Permission was given on April 8 for the movement of a cargo of gasoline from a Pacific port to Vladivostok, but during the past week this permission was rescinded. Possibly the Russo-Japanese pact had something to do with this action.

China has been buying drilling rigs. The information from China goes little farther than that the rigs are for exploitation—not exploration, which indicates that somewhere, sorely pressed China expects to develop a part of her requirements at least.

The East Indies, from whence came the tip to Holland a year ago that the blitzkrieg was impending, has suffered some reduction in production. The Netherlands East Indies, dangling like a tempting plum to the petroleum-hungry Japanese, have their Fifth Column situation well in hand, and are ready for eventualities. Meantime, the American fleet keeps a watchful eye on any movement from Japan southeastward.

It is only in the Western Hemisphere that there is no immediate threat to a change in the oil map. And although the Americas have seen their exports to Europe drop as a result of the war, it now appears that, ironically enough, Dr. Hans Bahr's set-up of English supply fits the picture, even though but temporarily.

The trail of German activity in a country can inevitably be seen in advance in the under-cover work of the German fifth columnist. The governments of the Americas are looking out for *that*. With the exception of one or two countries, Latin America seems to be filled with anti-Nazi feeling. The possibility of fifth column activity against the oil business in Venezuela and Colombia does not appear strong. Trinidad is an armed isle, and any fear of fifth column activity there under the guise of labor troubles, now seems remote.

Argentina is not yet self-sustaining in the matter of oil, although American geologists who have been aiding the Argentine government in exploratory work have expressed the opinion that within two to three years, Argentina could produce her needs.

In Ecuador, now on the threshhold of a development era, concern is caused by the nationality of certain geologists who have been busy surveying the terrain and sounding the waters of the ocean and bays within 500 miles of the Panama Canal. (This is covered in a separate article.)

Brazil is promoting a petroleum development campaign at the same time that she is showing a great interest in promoting good will between her people and those of the United States.

Mexico's position is unenviable. A financial loss in operations since expropriation amounting to more than 150,000,000 pesos and the loss of 450,000 pesos in tax revenue, have given the republic across the Rio Grande something to ponder. No statement as to a settlement of the confiscation trouble there has been made, but it would not be surprising if one came soon. Government operations there constitute a drain on the treasury which not even dollars from the till of Uncle Sam's treasury at Washington can make appear unimportant. And the Mexican government is showing a surprising lack of the radical tendencies predicted a year or two ago.

Canada is pushing development work. Scarcity of dollars makes it important that Canada produce as much as possible.

There is no dearth of petroleum in the United States. While the statement that a quarter turn of the valves on present producing wells in the United States could produce an unlimited supply of oil is not an accurate description of the situation, this country continues to add to reserves, and production could be boosted over-night by more than 800,000 barrels a day without injuring the wells. Before the year is out, she may have increased production a substantial part of that 800,000 barrels.

World Crude Output Rises In Face of War Crisis

By L. J. LOGAN, Associate Editor

WORLD production of 2,150,356,000 barrels of crude oil in 1940 represented a new all-time record, as that amount exceeded the previous peak output of the year before by 73,000,000 barrels (3.5 percent). However, the gain was due to an increase of 87,000,000 barrels (7 percent) in the United States, far outweighing a decrease of 14,000,000 barrels (1.7 percent) in the rest of the world.

The gain in crude output for 1940 was partially unjustified, however, inasmuch as it resulted in a 38,000,000-barrel increase of doubtful desirability in the stocks of all oils in the United States.

If United States production had been so restricted as to prevent the additions to storage, world output would have been up only 35,000,000 barrels (1.7 percent), with the United States component up 49,000,000 barrels (4 percent).

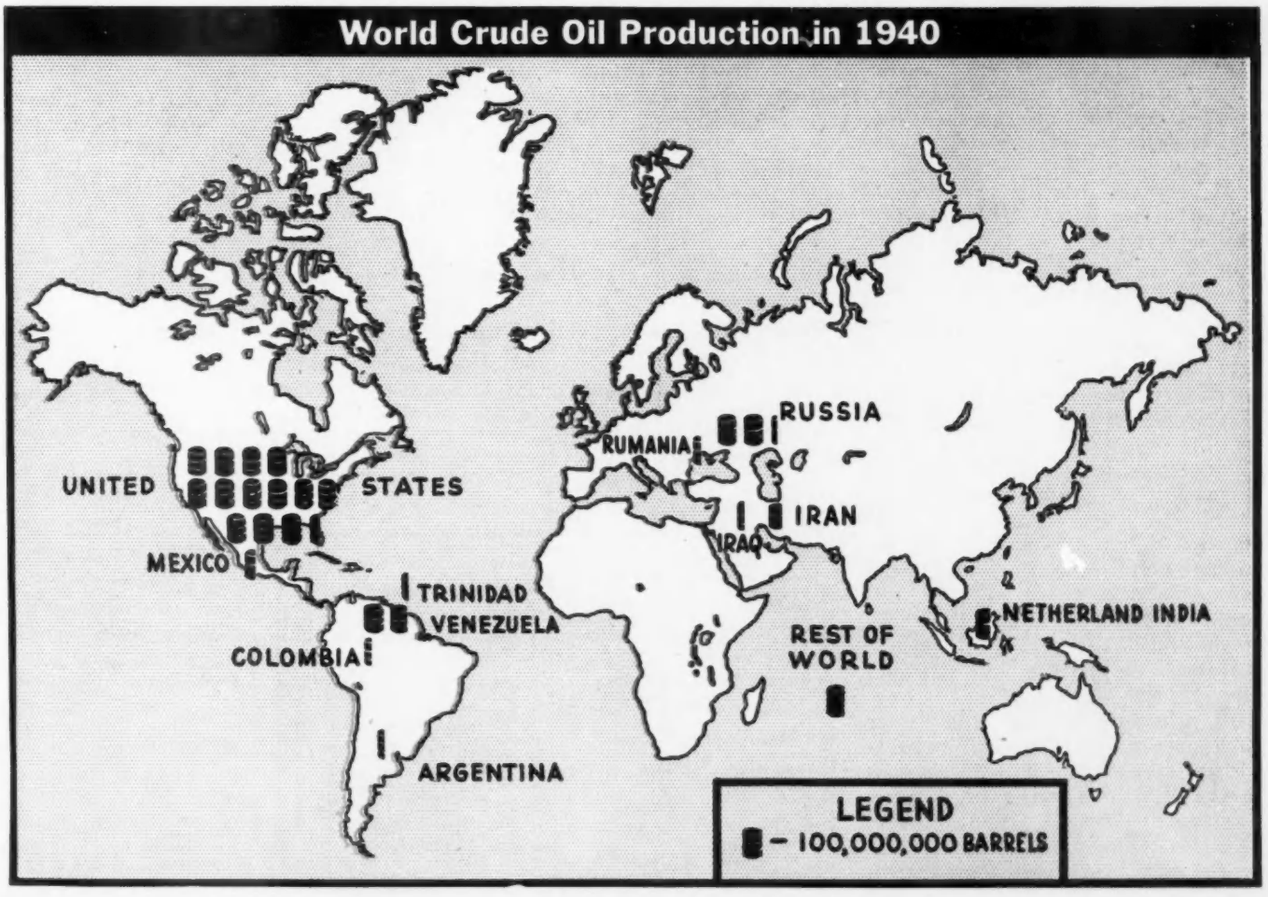
Any increase in world production in 1941 will have to be, therefore, a gain over artificially high output of 1940.

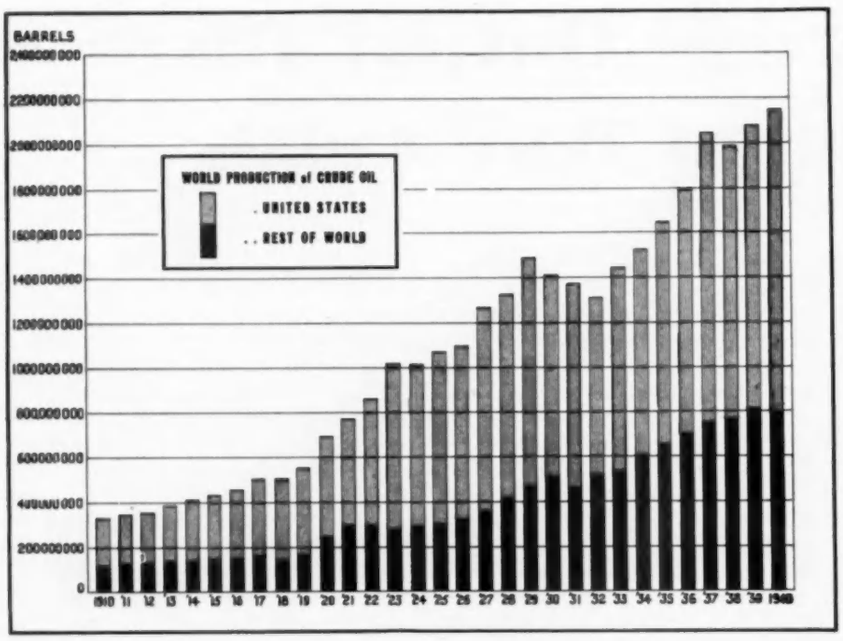
Nevertheless, such an increase is in prospect, even if production is held within demand, as a material further gain in consumption is indicated for the United States and consequently for the world, despite a probable decrease in Europe because of the war.

As shown in another article in this issue, world consumption of petroleum and substitutes is likely to show an increase of around 70,000,000 barrels in 1941, as compared with 1940, with United States use up about 105,000,000 barrels and that in the rest of the world possibly down 35,000,000 barrels because of curtailment in Europe.

This 70,000,000-barrel increase in world consumption could be met to the extent of 38,000,000 barrels simply through continuation of world production at the same rate as in 1940, considering that oil in the latter amount went to storage rather than into consumption in the United States.

The 1940 production rate, accordingly, would fall short of indicated 1941 world consumption by about 32,000,000 barrels; and to make the production of petroleum for the year equal the use, it would





have to be stepped up in that amount over the 1940 output.

Crude oil does not constitute, of course, all the oil consumed, as petroleum substitutes in the past two years apparently were turned out to partially meet demand in the extent of around 110,000,000 barrels annually. However, the production of substitutes in 1941 likely will not be greatly different from that in 1940, and crude oil probably will largely serve in supplying the added demand of this year, particularly as the increased use will be mainly in the United States.

Merely the balancing of world oil production with world consumption will require, therefore, a stepping up of crude oil output from the 2,150,000,000 barrels of 1940 to about 2,182,000,000 barrels in 1941, an increase of 1.5 percent, or the previously mentioned 32,000,000 barrels, if the consumption estimates used are approximately correct.

Moreover, it would not be at all surprising if production actually should be greater in 1941 than current demand, because of the situation and outlook in the United States, which produces and consumes around 60 percent of the world totals. For in this country, the crude-oil market and markets for refined products are strong, with prices advancing, and under such conditions, it may be expected that less attention will be given to the strict balancing of production with demand. Furthermore, ideas on what constitute adequate stocks may be revised temporarily upward for the duration of the war, as ample supplies of petroleum products are more essential now than in normal times.

The trends of crude oil production in the different producing countries in 1941 naturally will vary largely in accordance with the trends of consumption. Just as the United States will be primarily responsible for increased consumption, it also will figure predominantly in the indicated stepping up of world production to meet the demand. And in so far as the European countries will use less oil, the decrease will be reflected in production of the countries from which they normally import petroleum, including particularly Venezuela, the United States, and possibly the countries of the Near East, although recent war developments have made highly conjectural the future of the oil fields of Iraq, Iran, Bahrein Island, and Saudi Arabia. Russia apparently produced several millions of barrels more in 1940 than in 1939, and may be able to increase output more in 1941 to meet further enlargement of demand. No material changes occurred in 1940 in the Far East in either consumption or production, and similarly, no great changes are indicated for 1941, although the war has cast considerable uncertainty around that part of the world.

Venezuela Declines

In reflection of the shutting off of European markets, Venezuelan crude oil production decreased nearly 20,000,000 barrels in 1940, as compared with 1941. Following the German occupation of France before the middle of last year, the whole continent of Europe was blockaded by Great Britain, and Venezuelan oil thereby was shut out. Venezuela subsequently has increased shipments to Canada and to countries in South America, but not in nearly sufficient quantities to compensate for the loss of the European markets. Similarly, the loss of European business was only cushioned and not compensated by the Venezuelan agreement with the United States, under which reduced tariff rates resulted in increased shipments of about 6,000,000 barrels of heavy fuel oil and 1,000,000 barrels of crude oil into the United States in 1940 as compared with the previous year, the agreement having become

Rank of Leading Oil Producing Countries Changes in 1940, as War Disturbs Normal Markets

Iraq, Bahrein Island, and Trinidad Lose Ground; While Colombia, Argentina, and Burma Advance.

1930			1939			1940		
Rank and Country	Barrels Production	Percent of World	Rank and Country	Barrels Production	Percent of World	Rank and Country	Barrels Production	Percent of World
World	1,410,037,000	100.0	World	2,077,478,000	100.0	World	2,150,356,000	100.0
1. United States	898,011,000	63.7	1. United States	1,264,962,000	60.9	1. United States	1,351,847,000	62.9
2. Venezuela	136,669,000	9.7	2. Russia	212,500,000	10.2	2. Russia	215,659,000	10.0
3. Russia (U.S.S.R.)	125,555,000	8.9	3. Venezuela	205,956,000	9.9	3. Venezuela	186,780,000	8.7
4. Iran (Persia)	45,828,000	3.2	4. Iran (Persia)	78,151,000	3.8	4. Iran (Persia)	79,292,000	3.7
5. Netherlands India	41,729,000	3.0	5. Netherlands India	61,580,000	3.0	5. Netherlands India	60,830,000	2.8
6. Rumania	41,624,000	3.0	6. Rumania	45,996,000	2.2	6. Rumania	43,823,000	2.1
7. Mexico	39,539,000	2.8	7. Mexico	42,779,000	2.1	7. Mexico	40,347,000	1.9
8. Colombia	20,346,000	1.4	8. Iraq	30,791,000	1.5	8. Colombia	25,932,000	1.2
9. Peru	12,449,000	0.9	9. Colombia	22,037,000	1.1	9. Iraq	25,725,000	1.2
10. Trinidad	9,419,000	0.7	10. Trinidad	19,270,000	0.9	10. Argentina	20,266,000	0.9
11. Argentina	9,002,000	0.6	11. Argentina	18,486,000	0.9	11. Trinidad	20,169,000	0.9
12. India, British	8,292,000	0.6	12. Peru	13,508,000	0.6	12. Peru	13,427,000	0.6
13. British Borneo	4,907,000	0.4	13. Canada	7,838,000	0.4	13. Canada	8,718,000	0.4
14. Poland	4,904,000	0.3	14. Bahrein Island	7,589,000	0.4	14. Burma	7,979,000	0.4
15. Egypt	1,996,000	0.1	15. Burma	7,396,000	0.3	15. Bahrein Island	7,330,000	0.3
16. Japan	1,950,000	0.1	16. British Borneo	7,104,000	0.3	16. British Borneo	7,048,000	0.3
Others Chiefly 10 countries	7,826,000	0.6	Others Chiefly 18 countries	31,535,000	1.5	Others Chiefly 19 countries	35,184,000	1.7

Distribution of the World's Crude Oil Production in 1940 as Output Reaches New High of 2,150,356,000 Barrels

effective only shortly before the end of 1939.

Venezuela is promised for 1941, however, a larger market for its petroleum, and in so far as the promise is fulfilled, production will be expanded to meet the larger demand. At least a small increase in exports to the United States appears likely, as the United States this year has greater need for heavy fuel oil and probably will import larger quantities, particularly inasmuch as there was not full use in 1940 of the quotas of Venezuelan crude and fuel oils that could be brought in under the trade agreement at one half the regular tariff rates.

Furthermore, the recent war developments in the Balkans and the Near East have raised the prospect of materially increased shipments of Venezuelan petroleum to Great Britain. Heretofore, Britain has been obtaining large quantities from Iran, but such oil has been shipped around the Cape of Good Hope, and the long haul and limited tanker facilities have made such movement unsatisfactory. Consequently, it is believed that the British will find it increasingly expedient to replace supplies from the Near East and Far East with the more readily available oils of Venezuela and the United States; and this prospect has been accentuated by the inauguration of the lease-lend program in the United

[*Continued on page 124*]

Detailed World Production Figures, by Countries, by Years, Are Presented on Pages 125, 126 and 128.

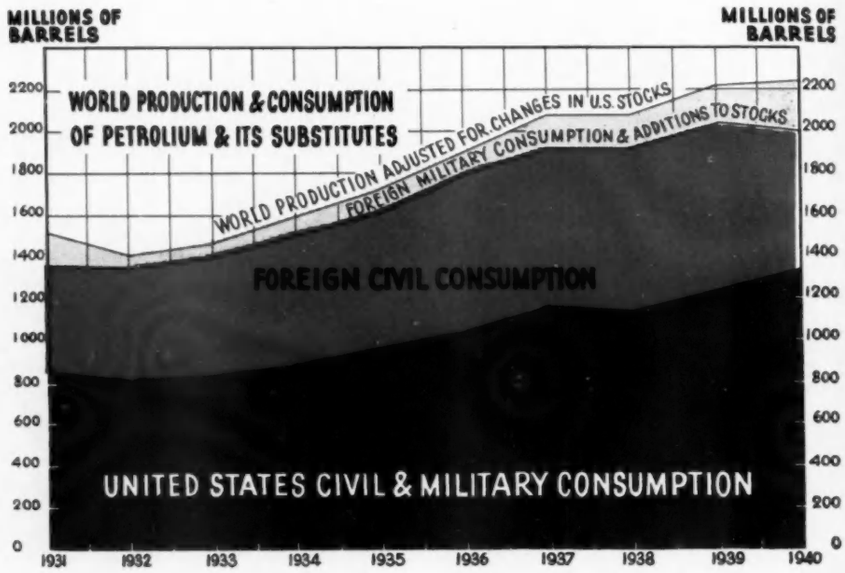
World Oil Consumption Continues to Climb

By L. J. LOGAN, Associate Editor

CONTINUED growth of oil consumption in the United States has more than offset war-caused curtailment of use in some other countries. Consequently, world consumption for all purposes (including military use and any building up of military supplies abroad) showed an increase of 7 percent in 1939, a small gain of 7/10 of 1 percent in 1940, and may register a further increase of over 3 percent in 1941.

(Indicated world consumption for all purposes was about 2,071,167,000 barrels in 1938, rose to 2,212,965,000 barrels in 1939, further advanced to 2,227,110,000 barrels in 1940, and may go to approximately 2,300,000,000 barrels in 1941.)

Despite the war, consumption has continued to increase consistently in the United States, which regularly accounts for around 60 percent of all consumption in the world. The use in this country (for both civil and military purposes) showed an increase of 8.4 percent, or 95,000,000 barrels, in 1939 and a growth of 7.6 percent, or 94,000,000 barrels, in 1940. And for 1941 a further increase of at least 8 percent, or 106,000,000 barrels is expected. (The country consumed 1,140,923,000 barrels in 1938, 1,236,076,000 barrels in 1939, and 1,330,000,000 barrels in 1940, and is expected to use at least 1,436,000,000 barrels in 1941.)



War has curtailed civilian consumption of petroleum and petroleum substitutes in most countries of Europe and also in some other nations but at the same time has increased military consumption. Consequently, total use outside the United States has held up fairly well despite the fighting, having shown an increase of 5.0 percent, or 47,000,000 barrels, in 1939 before declining 8.2 percent, or 80,000,000 barrels, in 1940; while the further decrease in 1941 may not be more than about 4 percent, or around 35,000,000 barrels.

(The indicated total foreign consumption was approximately 930,244,000 barrels in 1938, increased to 976,889,000 barrels in 1939, dropped to 897,110,000 barrels in 1940, and may further decline to about 864,000,000 barrels this year. These figures are based upon foreign civil consumption of 777,004,000 barrels in 1938, an increase to 790,481,000 barrels in 1939, a decrease to 675,885,000 barrels in 1940, and a possible further decline to around 643,000,000 barrels in 1941; and upon indicated foreign military consumption and additions to stocks of 153,240,000 barrels in 1938, a rise to 186,408,000 barrels in 1939, another gain to 221,225,000

Continued Expansion of Total Use Shown in Summary of World Consumption of Petroleum and Substitutes in 1938, 1939, and 1940

(From statistics embodied in the A.I.M.E. paper, "World Consumption of Petroleum and Its Substitutes in 1940," by V. R. Garfias, R. V. Whetsel, and J. W. Ristori, of Cities Service Company.)

COUNTRY	(Figures Indicate Barrels) 1938	1939	1940	Percent Change 1939-1940
Foreign Countries—				
Civilian Consumption	777,004,000	790,481,000	675,885,000	— 15.0
Indicated Military Consumption and/or additions to stocks	153,240,000	186,408,000	221,225,000	+ 18.8
Total Foreign Consumption (and/or additions to stocks)	930,244,000	976,889,000	897,110,000	— 8.2
United States—				
Total, Civilian and Military Consumption	1,140,923,000	1,236,076,000	1,330,000,000	+ 7.6
World—				
Total Consumption, Civilian and Military	2,071,167,000	2,212,965,000	2,227,110,000	+ 0.6

barrels in 1940, and possible continued use in 1941 at about the same rate as in 1940.)

Europe's Civilian Use Declines

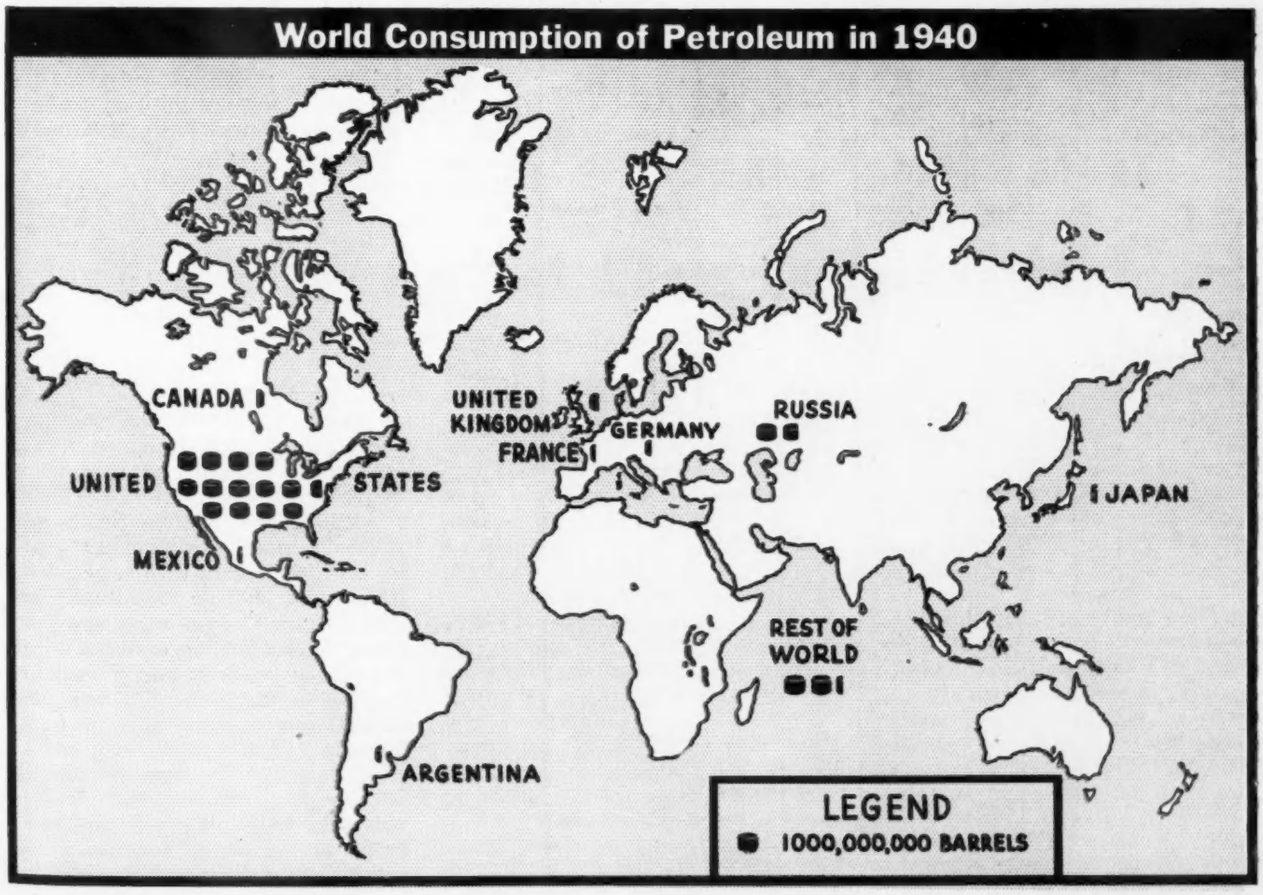
Civilian consumption in Europe may be around 35,000,000 barrels smaller in 1941 than in 1940, provided the United Kingdom and Germany continue to use about the same restricted quantities as in 1940. For the consumption in the Axis-controlled part of Europe (outside Germany itself) conceivably may be 40,000,000 to 50,000,000 barrels smaller in 1941 than in 1940, inasmuch as only a little over one half of the year 1940 reflected German control and inasmuch as no part of that year reflected the German domination of the Balkan countries. In 1940 there was an aggregate civilian consumption of about 75,000,000 barrels in France, Italy, Rumania, Netherlands, Sweden, Denmark, Belgium, Spain, Norway, Switzerland, Finland, Hungary, and Yugoslavia, all of which countries now are dominated, at least to some extent, by Germany; and it is conceivable that such consumption may sink as low as 30,000,000 barrels for 1941, with imports shut out by the British blockade and with the

War Causes Changes in Rank of Leading Countries in Consumption of Petroleum and Substitutes

(Figures are from American Institute of Mining and Metallurgical Engineers paper by V. R. Garfias, R. V. Whetsel and J. W. Ristori, of Cities Service Company.)

1938 (Before War)			1939 (War's Beginning)			1940 (Spread of War)		
Rank and Country	Barrels Consumption	Percent of World Total	Rank and Country	Barrels Consumption	Percent of World Total	Rank and Country	Barrels* Consumption	Percent of World Total
1. United States	1,140,923,000	59.5	1. United States	1,236,076,000	61.0	1. United States	1,330,000,000	66.3
2. Russia	164,500,000	8.6	2. Russia	170,600,000	8.4	2. Russia	180,000,000	9.0
3. United Kingdom	90,300,000	4.7	3. United Kingdom	88,200,000	4.4	3. United Kingdom	50,000,000	2.5
4. Germany	56,700,000	3.0	4. Germany	54,000,000	2.6	4. Canada	50,000,000	2.5
5. France	49,100,000	2.6	5. Canada	49,200,000	2.4	5. Germany	35,000,000	1.7
6. Canada	45,900,000	2.4	6. France	44,200,000	2.2	6. Argentina	33,000,000	1.6
7. Argentina	29,500,000	1.5	7. Argentina	30,950,000	1.5	7. Japan	26,000,000	1.3
8. Japan	25,000,000	1.3	8. Japan	25,400,000	1.3	8. France	21,500,000	1.1
9. Netherlands W. I.	20,650,000	1.1	9. Italy	21,800,000	1.1	9. Netherlands W. I.	20,000,000	1.0
10. Italy	20,500,000	1.0	10. Netherlands W. I.	19,850,000	1.0	10. Mexico	19,000,000	0.9
11. Mexico	18,000,000	0.9	11. Mexico	18,600,000	0.9	11. British India	16,200,000	0.8
12. Australia	16,250,000	0.8	12. Australia	16,280,000	0.8	12. Australia	16,000,000	0.8
13. British India	15,450,000	0.8	13. British India	15,700,000	0.8	13. Rumania	14,000,000	0.7
14. Rumania	12,780,000	0.7	14. Rumania	14,400,000	0.7	14. Netherlands E. I.	11,500,000	0.6
15. Netherlands E.I.	11,350,000	0.6	15. Netherlands	11,800,000	0.6	15. Iran	11,500,000	0.6
16. Netherlands	10,950,000	0.6	16. Netherlands E. I.	11,450,000	0.6	16. Italy	10,500,000	0.5
17. Iran	10,600,000	0.6	17. Iran	11,100,000	0.5	17. Union South Africa	10,500,000	0.5
18. Sweden	10,050,000	0.5	18. Sweden	10,950,000	0.5	18. Brazil	9,500,000	0.5
19. Venezuela	8,925,000	0.5	19. Union South Africa	10,300,000	0.5	19. Venezuela	9,000,000	0.5
20. Brazil	8,820,000	0.4	20. Venezuela	9,530,000	0.5	20. Netherlands	5,300,000	0.3
21. Union South Africa	8,270,000	0.4	21. Brazil	9,300,000	0.5	21. Sweden	4,500,000	0.2
Total 21 Leading Countries	1,744,518,000	92.5	Total 21 Leading Countries	1,879,686,000	92.8	Total 21 Leading Countries	1,883,000,000	93.9
Other Countries	143,409,000	7.5	Other Countries	146,871,000	7.2	Other Countries	122,885,000	6.1
World Total	1,917,927,000	100.0	**World Total**	2,026,557,000	100.0	**World Total**	2,005,885,000	100.0
World Total Outside United States	777,004,000	40.5	World Total Outside United States	790,481,000	39.0	World Total Outside United States	675,885,000	33.7

* Highly conjectural.



German authorities permitting no civilian oil consumption except that essential to the waging of war. These figures indicate a possible 45,000,000-barrel decrease in civil oil consumption in 1941 in Axis-controlled Europe. But Russia had a gain of about 10,000,000 barrels in civil consumption in 1940 and may show a similar increase in 1941, which might cut down the decrease for all Europe to around 35,000,000 barrels.

In foreign countries outside Europe, there was no material change in consumption in 1940, some countries having shown increases, while others registered decreases; and no substantial change is definitely indicated for 1941.

Nearly 60 Countries Consume Over Million Barrels Each of Petroleum and Its Substitutes in 1940, Although World Use Is Down

(Figures are exclusive of military consumption except in the United States)

(Taken from A.I.M.E. paper, "World Consumption of Petroleum and Its Substitutes in 1940," by V. R. Garfias, R. V. Whetsel, and J. W. Ristori, of Cities Service Company.)

COUNTRY	1938	1939	1940 (Estimated) Months (a) Before German Control	Months (b) Under German Control	Consumption (a) Before German Control	Consumption (b) Under German Control	Total*
United States	1,140,923,000	1,236,076,000	....	....	.....	.....	1,330,000,000
Russia	164,500,000	170,500,000	....	....	.....	.....	*180,000,000
United Kingdom	90,300,000	88,200,000	6	6	.....	.....	50,000,000
Germany	56,700,000	54,000,000	....	....	.....	.....	*35,000,000
Canada	45,900,000	49,200,000	....	....	.....	.....	50,000,000
France	49,100,000	44,200,000	5½	6½	17,000,000	*4,500,000	*21,500,000
Argentina	29,500,000	30,950,000	....	....	.....	.....	33,000,000
Japan	25,000,000	25,400,000	....	....	.....	.....	*26,000,000
Italy	20,500,000	21,800,000	5½	6½	8,000	*2,500,000	*10,500,000
Netherlands West Indies	20,650,000	19,850,000	....	....	.....	.....	20,000,000
Mexico	18,000,000	18,600,000	....	....	.....	.....	19,000,000
Australia	16,250,000	16,280,000	....	....	.....	.....	16,000,000
British India	15,450,000	15,700,000	....	....	.....	.....	16,200,000
Rumania	12,780,000	14,400,000	8	4	.....	.....	*14,000,000
Netherlands	10,950,000	11,800,000	5½	6½	4,000	*1,300,000	*5,300,000
Netherlands East Indies	11,350,000	11,450,000	....	....	.....	.....	11,500,000
Iran	10,600,000	11,100,000	....	....	.....	.....	11,500,000
Sweden	10,050,000	10,950,000	4½	7½	3,000	*1,500,000	*4,500,000
Union South Africa	8,270,000	10,300,000	....	....	.....	.....	10,500,000
Venezuela	8,925,000	9,530,000	....	....	.....	.....	9,000,000
Brazil	8,820,000	9,300,000	....	....	.....	.....	9,500,000
Denmark	6,680,000	6,930,000	4½	7½	2,000	*900,000	*2,900,000
Belgium	6,395,000	6,750,000	5½	6½	2,500	*800,000	*3,300,000
Egypt	5,650,000	6,300,000	....	....	.....	.....	6,000,000
French West Africa	5,390,000	5,770,000	5½	6½	2,500	*700,000	*3,200,000
Cuba	4,800,000	5,400,000	....	....	.....	.....	5,600,000
Chile	5,030,000	5,260,000	....	....	.....	.....	5,400,000
Spain	4,650,000	5,260,000	?	?	.....	.....	*4,000,000
Norway	4,580,000	5,250,000	4½	7½	1,500	*700,000	*2,200,000
New Zealand	5,370,000	5,220,000	....	....	.....	.....	5,300,000
Aden	4,937,000	5,137,000	....	....	.....	.....	5,000,000
Trinidad	4,720,000	5,110,000	....	....	.....	.....	5,000,000
British Malay	4,250,000	4,900,000	....	....	.....	.....	5,000,000
China	4,600,000	4,350,000	....	....	.....	.....	4,000,000
Philippine Islands	3,700,000	4,250,000	....	....	.....	.....	4,400,000
Iraq	3,840,000	4,160,000	6	6	2,100	*1,100,000	3,200,000
Hawaiian Islands	4,000,000	4,140,000	....	....	.....	.....	4,300,000
Colombia	2,975,000	3,377,000	....	....	.....	.....	3,500,000
Switzerland	3,250,000	3,310,000	5½	6½	1,500	*400,000	1,900,000
Poland	3,050,000	.....	....	....	.....	.....	.....
Uruguay	3,030,000	3,270,000	....	....	.....	.....	3,300,000
Ceylon	3,380,000	3,210,000	....	....	.....	.....	3,000,000
Panama Canal Zone	3,000,000	3,130,000	....	....	.....	.....	3,200,000
Greece	2,650,000	2,900,000	10	2	.....	.....	*3,000,000
Finland	2,100,000	2,440,000	3	9	500	*400,000	*900,000
Ireland	2,350,000	2,430,000	....	....	.....	.....	2,100,000
Czechoslovakia	2,220,000	.....	....	....	.....	.....	.....
Peru	2,570,000	2,380,000	....	....	.....	.....	2,300,000
Hungary	1,930,000	2,370,000	?	?	.....	.....	*1,800,000
Algeria	1,855,000	1,990,000	5½	6½	900	*200,000	*1,100,000
Puerto Rico	1,800,000	1,880,000	....	....	.....	.....	1,900,000
Palestine	1,600,000	1,770,000	....	....	.....	.....	1,700,000
Jamaica	1,620,000	1,740,000	....	....	.....	.....	1,700,000
Burma	1,550,000	1,600,000	....	....	.....	.....	1,600,000
Portugal	1,515,000	1,560,000	....	....	.....	.....	1,500,000
French Morocco	1,420,000	1,540,000	5½	6½	700	*200,000	*9,000,000
Hong Kong	1,240,000	1,380,000	....	....	.....	.....	1,300,000
Turkey	1,280,000	1,330,000	....	....	.....	.....	1,200,000
Yugoslavia	1,090,000	1,090,000	....	....	.....	.....	*1,000,000
Kenya & Uganda (Inc. Zanzibar)	980,000	1,005,000	....	....	.....	.....	1,000,000
Miscellaneous	16,362,000	16,982,000	....	....	.....	.....	14,185,000
World Total	1,917,927,000	2,026,557,000	....	....	.....	.....	*2,005,885,000

(a) or before war affected consumption. (b) or after war affected consumption. * Highly conjectural.

Although statistics are not available on military consumption and changes in stocks outside the United States, the military use and/or additions to storage abroad are approximately indicated by the difference between world production, which can be fairly well estimated, and known world consumption, plus any withdrawals from storage in the United States or minus any additions to United States stocks. It was upon this basis that the above figures on foreign military use were obtained by V. R. Garfias, R. V. Whetsel, and J. W. Ristori, of the Cities Service Company, for their A.I.M.E. paper on the subject.

Their figure of 221,225,000 barrels so obtained on military consumption and additions to stocks in foreign countries in 1940 indicated an increase in the use for those purposes of about 35,000,000 barrels over the 186,408,000 barrels similarly calculated for 1939 and a gain of about 68,000,000 barrels over the 153,240,000 barrels shown for 1938, the last year before outbreak of the war. To the present war-time levels of over 200,000,000 barrels annually, the foreign military consumption of oil has climbed from about 50,000,000 barrels per year in 1932 and 1933. The figures on foreign military use and additions to stocks as calculated by Garfias and associates are as follows:

Year	Foreign Military Consumption and Addition to Stocks (Barrels)
1932	55,424,000
1933	53,032,000
1934	93,084,000
1935	110,765,000
1936	92,118,000
1937	160,713,000
1938	153,240,000
1939	186,408,000
1940	*221,225,000

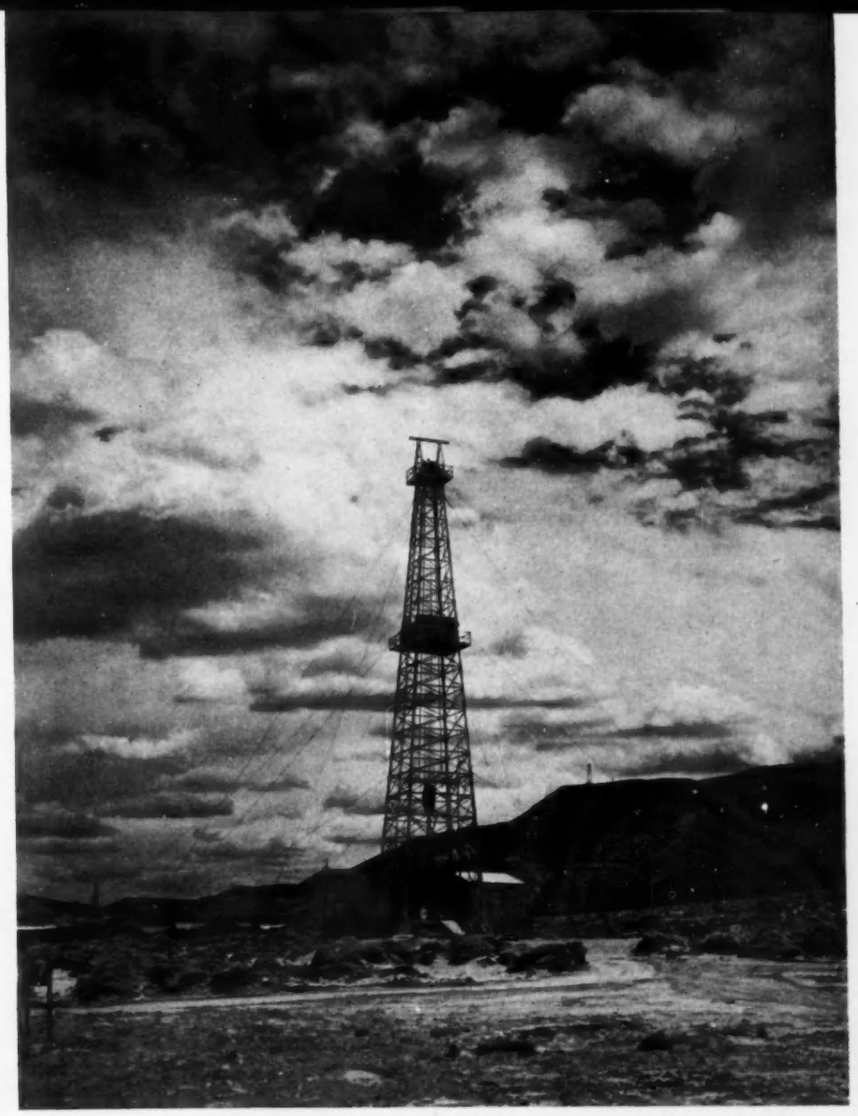
* Largely conjectural.

United States Leading Consumer

Although the United States previously was consuming only around 55 percent of all the petroleum used in the world for civil and military purposes, it has been using increasing proportions following outbreak of the war, in reflection of the restricted civil consumption virtually throughout Europe.

As indicated by one of the accompanying tables, the United States in 1938, prior to commencement of the war, accounted for

[*Continued on page 122*]



Drilling a deep well in Comodoro Rivadavia area

Argentina's Oil Position Improved During 1940

THE year 1940 saw unusual activity in the Republic of Argentina in drilling and production, and several pipe lines were constructed while two refineries were near completion at the end of the year. In most cases, the proven oil fields showed increased production as compared with 1939, and new discoveries added to the potential reserve of the district.

In the region near Comodoro Rivadavia, Province of Chubut, a new oil field was discovered south of the Tordillo producing area, 36 kilometers west of Central Camp and 3 kilometers south of El Tordillo Oriental. The discovery well reached a depth of 1848 meters, producing from Pampa sandstone at 1700 to 1750 meters. The area of the field has not been determined.

A new gas reserve containing some high-gravity oil was discovered on the Loma Negra structure 8 kilometers west of the Plaza Huincul oil field, Neuquen Province. The producing horizon is at 1000-1100 meters, and had been abandoned previously after unfavorable geophysical reports. One extension well to the north has been completed.

Several good producers were completed in proven fields. In the province of Mendoza, well B-1, drilled on the middle dome of Lunlunta, made an initial production of 450 barrels of oil per day and extended this producing area. The northern dome of Lunlunta received a producer on the completion of well L-4 with an initial production of 1250 barrels daily from the Potrerillos del Rético sandstone at 2559 meters. The subsurface size and shape of the dome have not yet been determined.

Yacimientos Petroliferos Fiscales continues to be the most active company operating in the republic, completing many good wells during the year. Other operators include Compañia Ferrocarrilera de Petroleo, Industrial and Commercial, Diadema Argentina, Astra, Solano, and Standard Oil Company.

The most active area in the country is in the Comodoro Rivadavia

Piedra Clavada 1, Wildcat of the Ultramar S.A.P.A. in Province of Salta, Argentina, drilling below 2900 feet, April, 1941. Piedra Clavada camp in background. Line of outcrop near horizon.

section where 259 wells were drilled during the year. Of the wells completed, Yacimientos Petroliferos Fiscales drilled 145, with Diadema Argentina completing 34, Sindicato 5, Astra 25, Ferrocarrilera de Petroleo 42, and Industrial and Commercial 8. Of the combined wells, 222 produced oil and 5 were gas wells, with 32 failures. Among the better wells finished in the area were 6 completed by Yacimientos Petroliferos Fiscales in the new Tordillo zone, with the initial production varying between 700 and 900 barrels daily.

Near Plaza Huincul in the Neuquen district, 20 wells were completed during the year, 13 being by Yacimientos Petroliferos Fiscales and the remainder by the Republic Company. Oil wells completed number 12, with 2 gas wells and 6 failures. The best producers completed in the field were Republic's No. 68, making 760 barrels daily through a 12 mm. choke, and Y. P. F.'s NI. 21, flowing 560 barrels through the same size choke.

In the Province of Salta, Yacimientos Petroliferos Fiscales completed 13 oil wells and abandoned 6 wells as failures. The better wells consist of R-10, which flowed 880 barrels daily on a 10 mm. choke, and T-109, with an initial flow of 560 barrels on the same size choke.

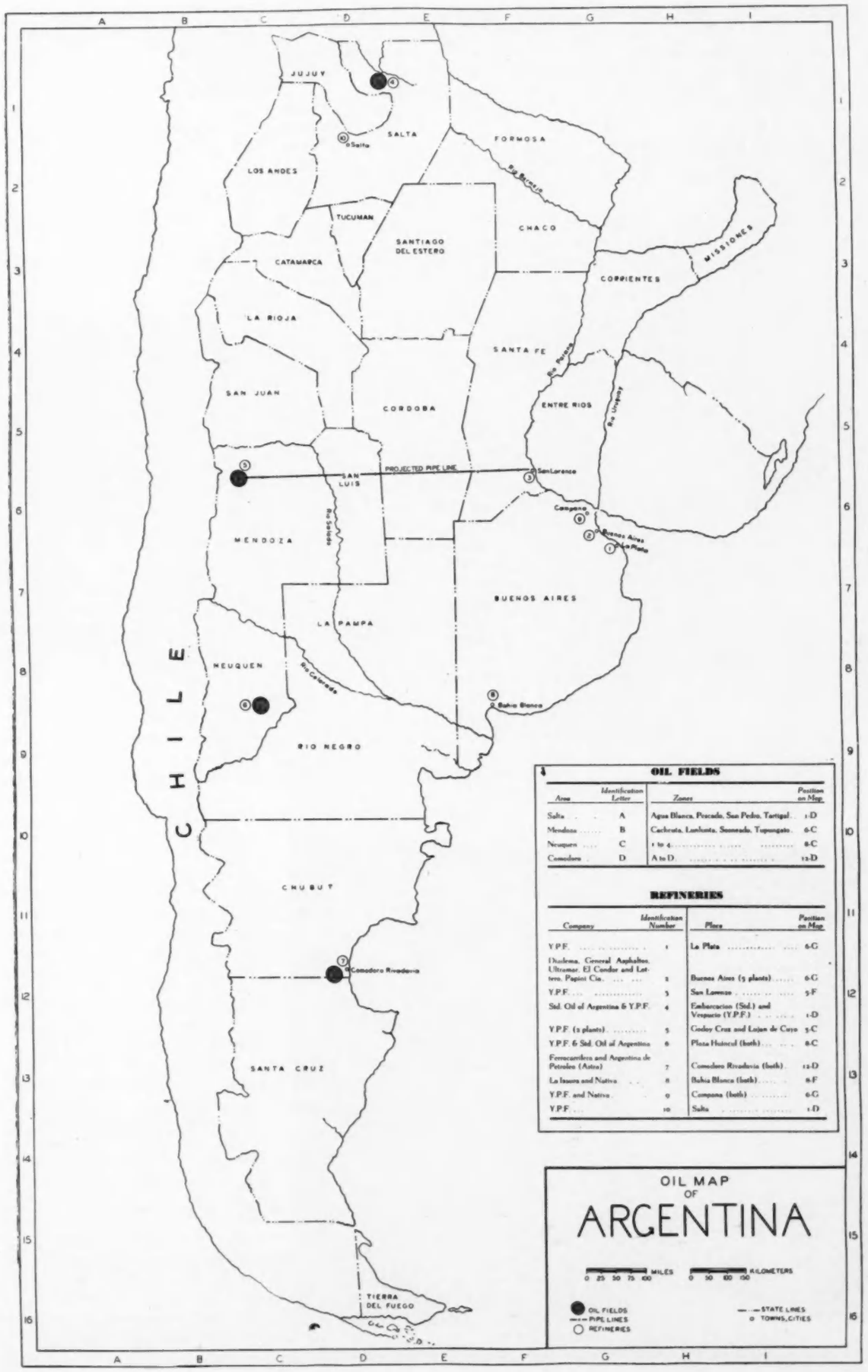
Yacimientos Petroliferos Fiscales, the only operator in the province of Mendoza, completed in that area 7 oil wells and declared 3 failures. Among the producers were wells T-25, L-4, and T-30, which had initial flows of 2200 barrels, 1250 barrels, and 1200 barrels respectively.

The accompanying table shows the amount of production in the various oil producing districts during

Argentina Production and Well Data by Areas

DISTRICT	1939		1940		Accumulative Production Total Up To December, 31 1940	WELL DATA AS OF DECEMBER 31, 1940							
	Total Production in Barrels	Daily Production in Barrels	Total Production in Barrels	Daily Production in Barrels		Wells Drilling	Natural Flow	Gas/Air Lift	Pumping	Closed In	Abandoned	Total Wells Drilled	Wells Completed in 1940
Comodoro Rivadavia:													
Yacimientos Petroliferos Fiscales	8,296,665	22,730	8,483,195	23,177	109,578,118	21	28	1	1,628	239	413	2,693	145
Other Operators	6,516,310	17,847	6,516,896	17,803	79,640,171	6	5	....	1,092	289	498	1,982	109
Plaza Huincul:													
Yacimientos Petroliferos Fiscales	641,730	1,757	676,487	1,852	7,299,715	4	18	....	137	93	100	389	13
Other Operators	659,383	1,801	601,353	1,644	9,689,778	2	10	....	96	8	57	182	7
Province of Salta:													
Yacimientos Petroliferos Fiscales	491,481	1,341	819,346	2,236	2,962,789	6	28	7	54	39	34	169	19
Other Operators	1,221,784	3,345	1,029,564	2,809	14,013,304	1	22	20	27	23	60	152	1
Province of Mendoza:													
Yacimientos Petroliferos Fiscales	808,907	2,211	2,515,457	6,885	3,718,656	9	17	....	25	8	37	96	10
Other Operators	*6,495	43	.....	.....	261,487	....	....	....	....	22	8	30	.....
Total	18,642,755	51,075	20,642,298	56,406	127,164,018	49	128	28	3,059	721	1,207	5,693	304

* Production to May.


JUJUY
SALTA
Salta
FORMOSA
LOS ANDES
Rio Bermejo
TUCUMAN
SANTIAGO DEL ESTERO
CHACO
MISIONES
CATAMARCA
CORRIENTES
LA RIOJA
SANTA FE
Rio Parana
SAN JUAN
CORDOBA
ENTRE RIOS
Rio Uruguay
PROJECTED PIPE LINE
SAN LUIS
San Lorenzo
Campana
Buenos Aires
La Plata
Rio Tercero
MENDOZA
BUENOS AIRES
LA PAMPA
CHILE
NEUQUEN
Rio Colorado
Bahia Blanca
RIO NEGRO
CHUBUT
Comodoro Rivadavia
SANTA CRUZ
TIERRA DEL FUEGO
OIL FIELDS
Area | Identification Letter | Zones | Position on Map
Salta | A | Agua Blanca, Pescado, San Pedro, Tartigal | 1-D
Mendoza | B | Cacheuta, Lunlunta, Sosneado, Tupungato | 6-C
Neuquen | C | 1 to 4 | 8-C
Comodoro | D | A to D | 12-D
REFINERIES
Company | Identification Number | Place | Position on Map
Y.P.F. | 1 | La Plata | 6-G
Diadema, General Asphalton, Ultramar, El Condor and Lotero, Papini Cia. | 2 | Buenos Aires (5 plants) | 6-G
Y.P.F. | 3 | San Lorenzo | 5-F
Std. Oil of Argentina & Y.P.F. | 4 | Embarcacion (Std.) and Vespucio (Y.P.F.) | 1-D
Y.P.F. (2 plants) | 5 | Godoy Cruz and Lujan de Cuyo | 5-C
Y.P.F. & Std. Oil of Argentina | 6 | Plaza Huincul (both) | 8-C
Ferrocarriles and Argentina de Petroleo (Astra) | 7 | Comodoro Rivadavia (both) | 12-D
La Isaura and Nativa | 8 | Bahia Blanca (both) | 8-F
Y.P.F. and Nativa | 9 | Campana (both) | 6-G
Y.P.F. | 10 | Salta | 1-D
OIL MAP OF ARGENTINA
MILES 0 25 50 75 100
KILOMETERS 0 50 100 150
OIL FIELDS
PIPE LINES
REFINERIES
STATE LINES
TOWNS, CITIES

1939 and 1940, and the accumulative total of oil from those fields. The table also gives the drilling and production statistics for the districts.

At the start of 1940, construction began on two new refineries by Yacimientos Petrolíferos Fiscales in the provinces of Mendoza and Salta. Work progressed rapidly, and by the end of the year, both refineries were nearly ready to start operations.

The first, and larger of the two refineries is located in Luján de Cuyo, Mendoza Province, to refine the crude from the Tupungato field nearby. When completed, the plant will have a capacity of treating daily 3150 barrels of oil, and it can produce approximately 70,000,000 liters of naphtha annually. The other refinery is located near Salta and is constructed similarly to the Luján de Cuyo refinery, and treats the oil from the Orán field. This modern cracking plant will have a capacity of handling 1890 barrels daily, and will produce 70,000,000 liters of naphtha during the year.

Several new pipe lines, including roadways, pumping equipment, and living facilities, were constructed during the year in Argentina to facilitate movement of oil to the refineries. The lines are mostly short, but in many cases proved difficult because of the rocky terrain through which they are laid. The pipe lines and pumpstations are described in the following paragraphs.

Tupungato-Anchoris pipe line, located in the Province of Mendoza in the western part of Argentina, connects the Tupungato oil field, situated in the foothills of the Andes, with Anchoris, a town served by the railroad which runs from Buenos Aires to the Pacific Ocean. Its construction simplifies the transportation of oil by railroad to the refineries of San Lorenzo and Campana, located respectively in the provinces of Santa Fe and Buenos Aires.

The 8-inch line is 17 kilometers in length, and has a capacity of 787 barrels per hour. Supplying the line with oil is the dispatching plant at Tupungato, with its two reservoirs of 945,000 and 63,000 barrels and its pumping system.

In Anchoris, the receiving plant also has large reservoirs for oil storage, as well as 22 double column loading racks for filling tank cars. A modern camp for employes is erected, having in addition to the homes, an office, garage, electric light system, and sanitation features. A small house in the center of the camp has facilities for telephone and telegraph. A telephone line extends the length of the pipe line.

Parallel to the pipe line runs a road built during the year from Anchoris to Tupungato. A large amount of road materials was moved in to construct the first 12 kilometers, which involved also the erection of concrete sewers, bridges, and drainage ditches. The road rests on the dry river bed running from the hills for the last 5 kilometers.

The Pescado River-Orán pipe line moves crude from the Pescado River oil field, located on the river of that name, to Orán, in the northwestern part of the province of Salta. From that city, the oil is shipped by tank car to the refinery located near Salta, by means of the North Central Argentina Railroad, part of the state railroad system.

The 4-inch pipe line is 27 kilometers in length, and has a normal capacity of moving 156 barrels hourly, collected from the storage tanks at Camp Rio Pescado and driven through the line by two groups of pumps, to the receiving and storage plant located in Orán. This terminal has two storage reservoirs of 20,160 barrels each, 16 double loading columns for tank cars, and a large scale for weighing them. The camp is supplied with houses for the employes, machine shops, a pump house, electric system and sanitary measures.

A road is constructed parallel to the pipe line, being 19 kilometers in length, the construction delayed by the erection of a wooden bridge, sewers, and conduits.

El Tordillo-El Trebol pipe line was built during the year, a 12-kilometer line, 8 inches in diameter, for carrying the production from El Tordillo oil field to the seacoast storage tanks of El Trebol, near Comodoro Rivadavia. The line carries a capacity of 312 barrels per hour, receiving the oil from the two reservoirs in the field containing 10,080 and 5040 barrels each. Two groups of pumps have been provided to facilitate the movement of the crude.

A road, of 13.5 kilometers in length, was built in 1940 to join the Vespucio oil field with the city of Tranquitas, situated in the northern part of the province of Salta. This road contains several well constructed features, such as conduits, sewers and wooden bridges.

The year 1940 added a large reserve to Argentina's known oil territory, and the addition of refineries and pipe lines offer increased future outlet for production.

Road built by Yacimientos Petroliferos Fiscales to the Tupungato field.

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Yes, but the tough decision is still to come . . . whether to get the brand that gives us the best trade-in allowance or reciprocate with some company which throws an order our way.

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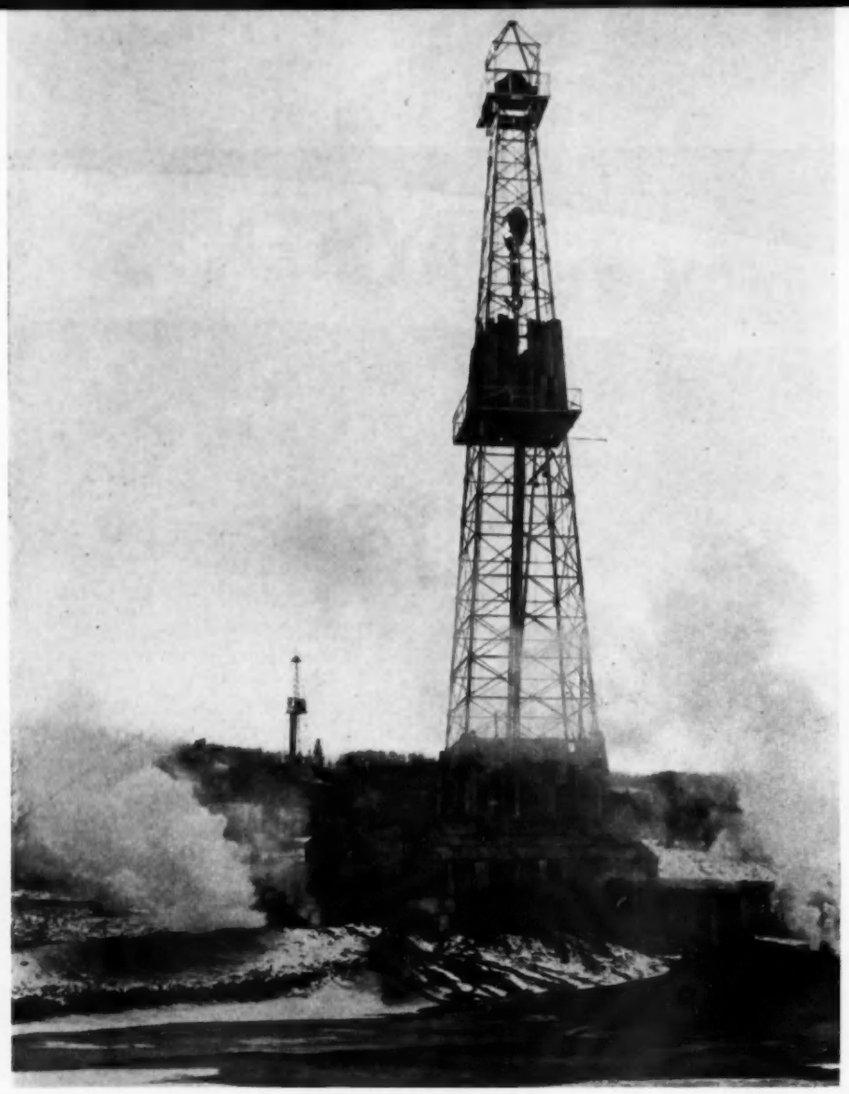


Photos by H. Pollard.

ASSURING adequate supplies of petroleum products to meet any emergency, stimulating exploration for oil throughout the Dominion and checking the acute foreign exchange situation were highlights of Canada's oil industry war effort in 1940.

Canada's Oil Industry Geared for War

By CHARLES J. PENN, Toronto, Canada

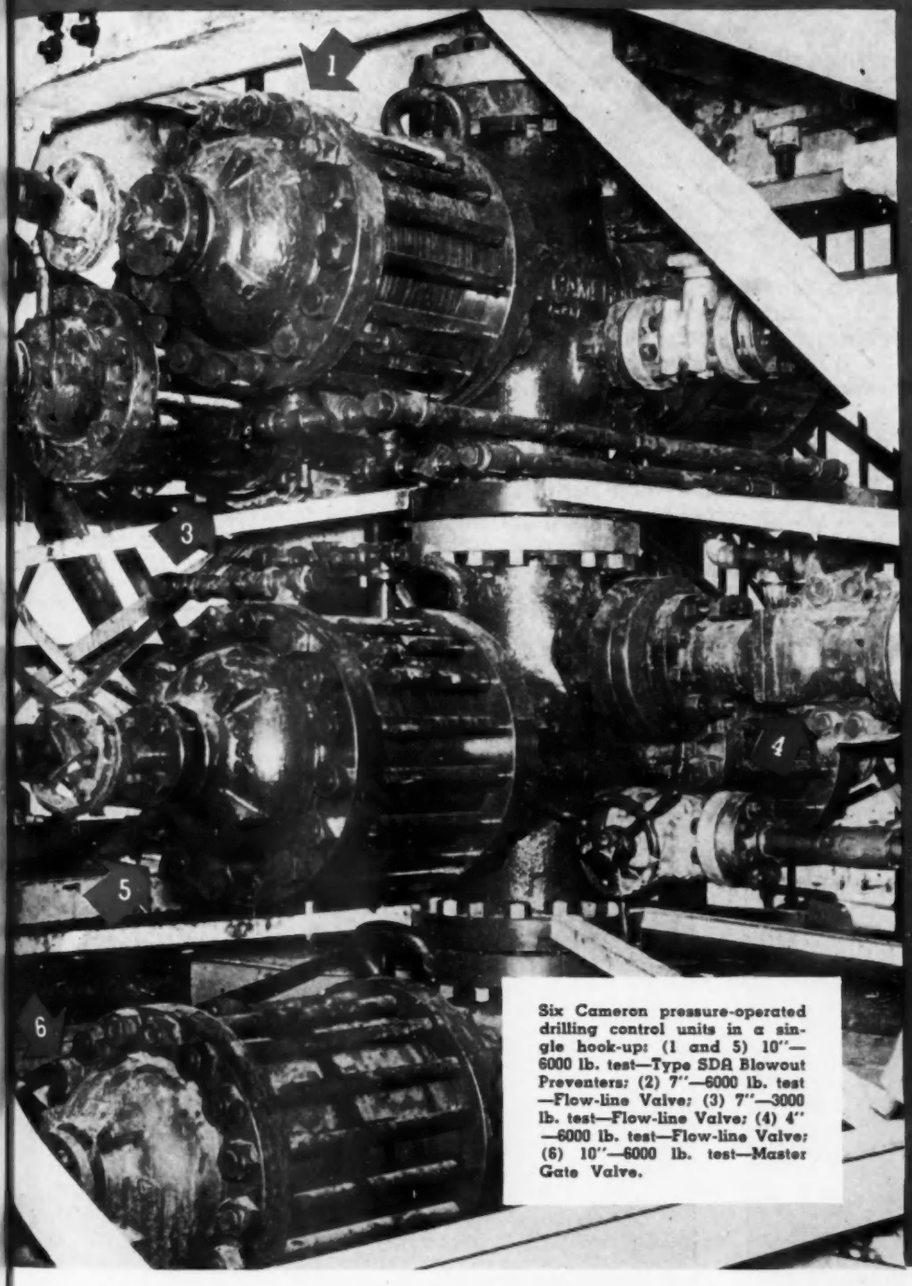
THE year 1940 was one of the most eventful recorded in the history of Canada's oil industry. The country's war-frame-of-mind brought about a complete transformation of outlook. Drastic measures were taken by the government to assure all-out-aid to Britain.

Conservation of foreign exchange in the United States necessitated restrictions being placed on the oil industry and allied industries. These restrictions were by way of curtailing importation of motor cars, forbidding both the local manufacture and importation of service station equipment and its erection. In Western Canada storage facilities for crude oil were increased to assure a continuous supply throughout the year. The McGillivray Royal Commission concluded its two-year probe into the Alberta oil industry and the findings were of interest to all connected with the industry. Some idea as to the magnitude of the task can be realized by the fact that the completed report consisted of 161 volumes containing 18,000 pages and 4,500,000 words.

Discovery of the Princess oil field in Southern Alberta by Standard Oil Company of British Columbia on December 31 brought a remarkably active year to a sensational close. Oil production and consumption too eclipsed all previous annual records.

War has changed the tempo of Canada's petroleum industry and 1940 saw an eager industry with

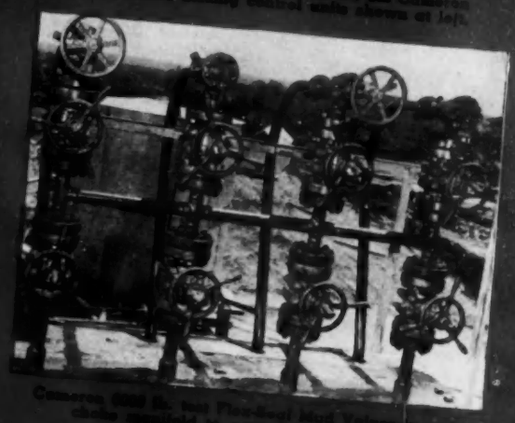
PICTURE OF PREPAREDNESS!



Six Cameron pressure-operated drilling control units in a single hook-up: (1 and 5) 10"—6000 lb. test—Type SDA Blowout Preventers; (2) 7"—6000 lb. test—Flow-line Valve; (3) 7"—3000 lb. test—Flow-line Valve; (4) 4"—6000 lb. test—Flow-line Valve; (6) 10"—6000 lb. test—Master Gate Valve.

EDWIN M. JONES' NEW PRESSURE DRILLING HOOK-UP COMPLETELY *Cameron-ized*

Cameron pressure control manifold for the six Cameron pressure-operated drilling control units shown at left.



Cameron 6000 lb. test Flex-Seal Mud Valves in a choke manifold to control mud returns.

When Edwin M. Jones' deep Wilcox test in the George West field, Live Oak County, Texas, blew out recently, bottom hole pressure was estimated at 6500 to 7000 lbs. 14.4 mud and 3000-lb. test control equipment were no match for the terrific pressures.

But now, as operations are resumed, this operator is prepared for any emergency. The Cameron, 6000-lb. test, Pressure Operated Drilling Control Units in the hook-up above will provide positive protection during every step of the drilling operations. Pipe rams are provided in both blowout preventers to permit uninterrupted rotation of the pipe through the closed rams if necessary. The master gate assures a pressure-tight seal when pipe is out of the hole. Pressure operated gate valves on both flow-lines, which are tied into a central choke manifold on the derrick floor, provide maximum safety at those points. A Cameron Flex-Seal Kelly Cock and a Cameron pressure-operated Flex-Seal Mud Valve on the standpipe are additional safeguards. Cameron 6000-lb. test Flex-Seal Mud Valves are used generously throughout the mud manifold system to assure pressure-tight seals at all vital points and to minimize maintenance expense.

Operators planning a deep test in either wildcat or proven high pressure areas are urged to consider carefully the numerous advantages of Cameron Series 900-6000 lb. test—Pressure Operated Control Units and Cameron Flex-Seal Mud Valves for efficient mud manifold service.

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plans complete, assuring adequate quantities of aviation gasoline, lubricating and fuel oils and other products to the Department of Munitions and Supplies.

Oil companies have at all times been well ahead of all demands and one prominent oil executive stated that the industry has not only taken care of the increased industrial demand, but has also kept ahead of all demands by the army and navy services for their extensive requirements, as well as by the Commonwealth Air Training plan for aviation gasoline.

At their own expense, oil companies stored large reserve quantities of aviation gasoline considered necessary by the Royal Canadian Air Force.

When looking back over the period under review, one cannot avoid seeing that the most outstanding factor in the Dominion's petroleum industry centered around government control and legislative measures brought into effect.

Outlook got its first jolt in July of last year when the dominion government decided to take the reins of the petroleum industry into its own hands. Banker and business executive George R. Cottrelle was appointed oil controller of Canada. He was armed with wide powers and at the time of his appointment clarified his position by stating that his task was to take care of the requirements of the three arms of war—air, army and navy; industry employed in Canada's war effort, and the ordinary requirements of the dominion.

To enable the oil controller to control these important divisions, production, refining and imports of petroleum products were put under his jurisdiction.

Two orders had been issued by the controller by the end of 1940 and it was discernible that his first intention was to check expansion of consumption and to reduce importations in an effort to alleviate the acute foreign exchange situation and to stimulate domestic production.

Comprising nine clauses, the first order was issued on August 12. This order virtually put an end to an extension of the retail market. Gasoline pump installations were stopped while service stations were not allowed to increase existing equipment unless special circumstances prevailed. Wholesale vendors of petroleum products could not sell to any retail dealer who was not engaged in the business prior to the date of issuance of the order.

A second order early in September restricted sale of imported fuel oil to new oil-burning units. Directed mainly towards stopping

Direct Canadian Oil Industry During the War Effort

Washington Press Photo.

R. E. ALLEN
Chairman of the Alberta Petroleum and Natural Gas Conservation Board.

G. R. COTTRELLE
Oil Controller of the Dominion of Canada.

IDEAL

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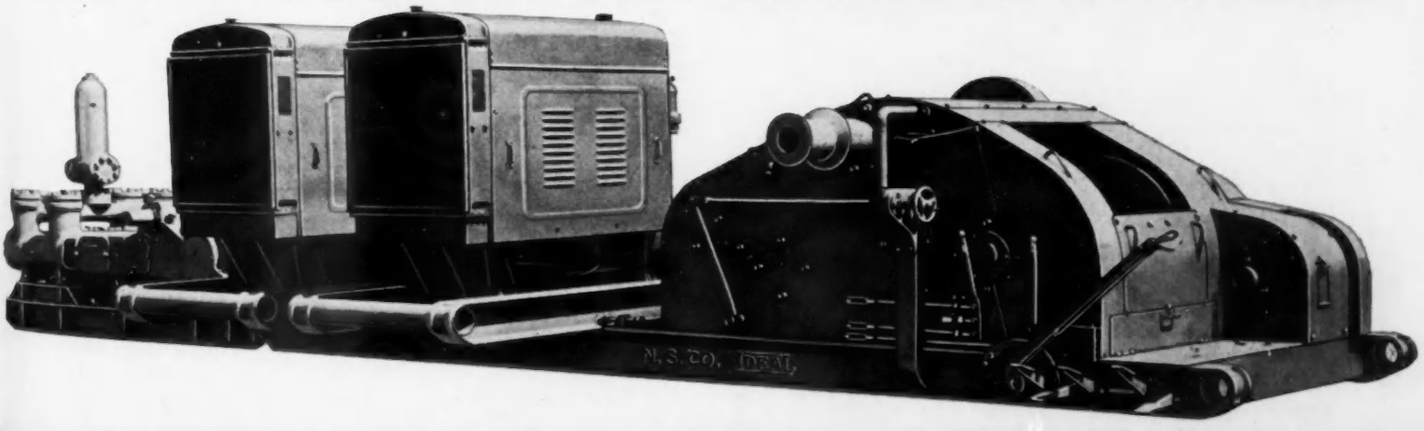
CONSOLIDATED RIGS

There is no stronger recommendation than *"Engineered by National"* for a Consolidated Power Rig or any other piece of oil field equipment. With science and engineering taking the top spot in oil field operations today — National contributes to the industry engineering service and experience which has continually led the field and kept Ideal Equipment in the foreground.

● A complete line of Consolidated Rigs, representing years of research and practical field development, is now offered by National for drilling to various depths as given in the table below. Driven by Internal Combustion Engines, these rigs feature easy portability and smooth performance.

	Recommended Drilling Depth Using 3½" Drill Pipe	Recommended Drilling Depth Using 4½" Drill Pipe	Power Rating	Number of Hoisting Speeds	Number of Rotary Speeds	Drum Size, Diameter and Length
Type 30	3,000'	-----	100 H. P.	4	4	16" x 36"
Type 40	5,000'	4,000'	150 H. P.	4	4	16" x 44"
Type 50	7,500'	5,000'	350 H. P.	6	3	16" x 34"
Type 75	10,000'	7,500'	500 H. P.	6	3	23½" x 35"
Type 100	12,000'	10,000'	650 H. P.	6	3	26" x 46"
Type 125	14,000'	12,500'	950 H. P.	6	6	28" x 42"



THE NATIONAL SUPPLY CORPORATION

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TABLE 1
Production of Petroleum in Canada, by months, 1938-1940

MONTH	BARRELS		
	1940	1939	1938
January	486,859	533,166	457,506
February	655,586	358,176	413,244
March	570,131	385,273	480,901
April	634,869	559,368	464,418
May	676,486	713,947	566,473
June	657,098	821,308	538,936
July	877,133	899,169	701,813
August	868,651	795,844	825,546
September	841,752	720,866	892,732
October	817,596	816,257	688,825
November	893,438	731,209	445,640
December	738,454	502,920	489,423
Total	8,718,053	7,837,503	6,965,457

manufacturers from changing over to oil burning equipment from coal or gas, this order allows however, new plants consuming 4000 imperial gallons or less a year to be supplied.

Production

Operating under well directed conservation regulations, Canada's 1940 crude oil production eclipsed all previous records. Official figures from the Dominion Statistician (Table 1) shows the steady rise in production over the last three years.

Alberta's yearly production figures are included in Table 2.

Drilling

Exploratory drilling continued throughout the dominion on an extensive scale, while it was mainly confined to Alberta. Of much significance was the discovery of the Princess field. Situated 130 miles east of Calgary and Turner Valley the new field shows promise of developing into a major production area. At the time of the discovery, December 31, 1940, R. E. Allen, chairman of the Petroleum and Natural Gas Conservation Board, Calgary, considered the discovery such as to warrant official recognition. His letter as circulated throughout Canada reads:

"On December 31, 1940, Standard Oil Company of British Columbia, first placed on production its Princess 2 well, located in Legal Subdivision 3, Section 13, Township 20 North, Range 12 West of the Fourth Meridian. This well is located on lands of the Canadian Pacific Railway Company approximately one mile north of Princess station on the Canadian Pacific Railway and about six miles east of the town town of Patricia.

"The well was completed at 3290 feet with casing cemented at 3220 feet, and is producing sweet oil of 26.3 A.P.I. gravity. Its current productivity is rated at 520 barrels daily of oil and 12,750 thousand cubic feet of gas.

"The production performance of this well to date together with its physical characteristics indicate that it is a commercial well and may accordingly be classified as the discovery well of a new oil field.

"This board is, therefore, pleased to recognize Princess 2 as the discovery well of the Princess oil field, and congratulates Standard Oil Company of British Columbia for the discovery that has rewarded their faith in the oil prospects of Alberta, and John Galloway, geologist, whose knowledge and perseverance led to the discovery of this new field.

"The discovery of the Princess field comes at a peculiarly opportune time for Alberta and for Canada. The location of the field, the quality of the oil and speed and economy of drilling all combine to make it an important addition to the war-time economy of the province and the dominion."

One hundred and thirty new wells were producing in Turner Valley by the end of 1940 while at the close of 1936 only 2 wells were operating. Thirty-six wells were completed in the Valley in 1940 and at the turn of the year, operations were a little ahead of a year ago. Thirty-six wells were under way January 1, in Alberta, and of these, 23 were in Turner Valley and the rest in outside fields.

Drilling developments in Alberta show that in 1940, 73 licenses were issued, 67 rigs erected, 107 wells actually drilling, 65 wells completed, 6 suspended and 13 abandoned. Oil field development and footage drilled during 1940 is shown in the following statistics:

TABLE 2
Alberta Oil Production by Calendar Years

Calendar Year	Barrels
1914-1921	56,699
1922	15,853
1923	10,003
1924	14,049
1925	168,643
1926	219,598
1927	332,133
1928	489,531
1929	999,152
1930	1,433,844
1931	1,455,195
1932	917,622
1933	1,013,040
1934	1,265,940
1935	1,263,750
1936	1,320,442
1937	2,796,908
1938	6,742,039
1939	7,594,411
1940	8,493,237
Total	36,601,989

Drilling costs remained comparatively high during the year—rough terrain and high equipment costs were the cause. Average bit costs in Turner Valley amounted to nearly $22,000 per well. Some conception as to actual equipment costs can be gleaned from the following figures which have been supplied by a machinery house in Calgary.

Cost of equipment landed in Turner Valley has been the subject of many a discussion with Ottawa. Reduction in duties would no doubt bring about increased exploration.

Cost of a heavy-duty rotary outfit, including 8000 feet of drill pipe and 7500 feet of casing at the factory in the United States amounts to $117,445.04. By the time this equipment is delivered at Okotoks (central Turner Valley) the cost mounts to $158,957.84. The additional charge is made up with freight $16,715.88; sales tax $8864.37; duty $5564.08; war exchange tax $10,368.47. The operator has to pay over $31,000 more than the manufacturer receives.

Oil Field Development—1940

FIELD	Licenses	Rigs	Active	Comp.	Susp.	Abnd.
Turner Valley	45	41	59	36	0	0
Vermilion-Lloydminster	14	14	13	13	1	2
Princess	2	2	4	4	0	1
Other areas	12	10	31	12	5	10
Total	73	67	107	65	6	13

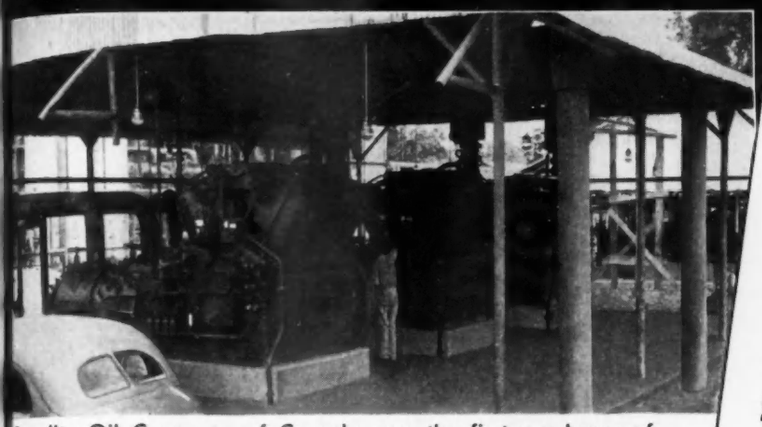
Footage Drilled—1940

FIELD	1940		1939	
	Feet	Holes	Feet	Holes
Turner Valley	296,832	59	281,274	58
Foothills, Highwood to Bow	6,799	6	25,891	8
Vermilion-Lloydminster	23,448	13	67,122	35
Other areas	43,025	24		
Total	370,104	102	374,287	101

Drilling conditions are on an average more difficult than oil fields in the United States and the contractor is also faced with considerably higher equipment costs.

Demand on natural gas brought about a shortage in Ontario during the latter part of 1940 and early in 1941. Steps are being taken to assure sufficient future supplies.

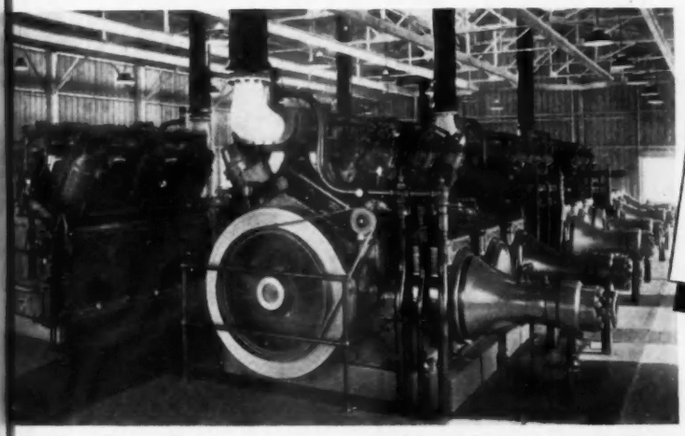
Good? Sure!...
Or They Wouldn't Order More!



Royalite Oil Company, of Canada, was the first purchaser of Type G-MV compressors. Here are three more 400-hp units recently installed by the same company in South America.

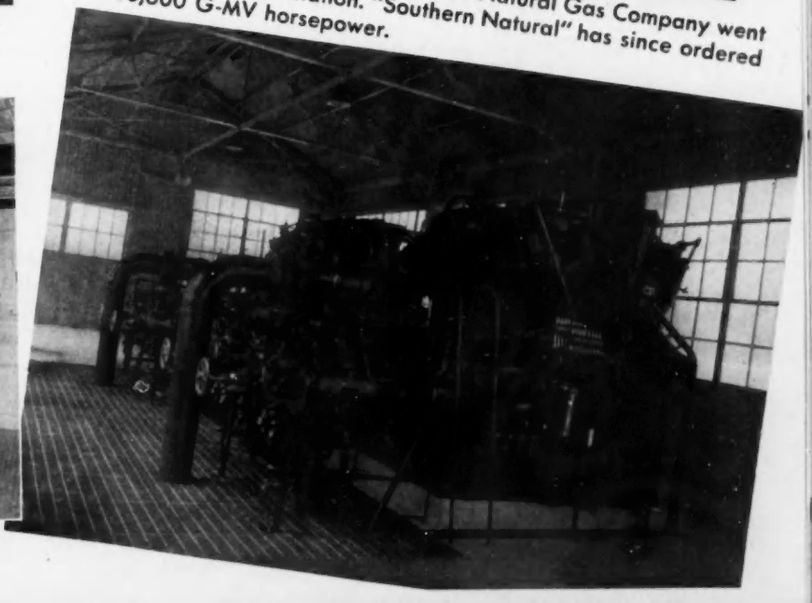
Type G-MV compressor units have gone into many plants as "trial horses." Invariably, they performed so efficiently... pleased hypercritical owners so well... that orders for more G-MV's followed quickly!

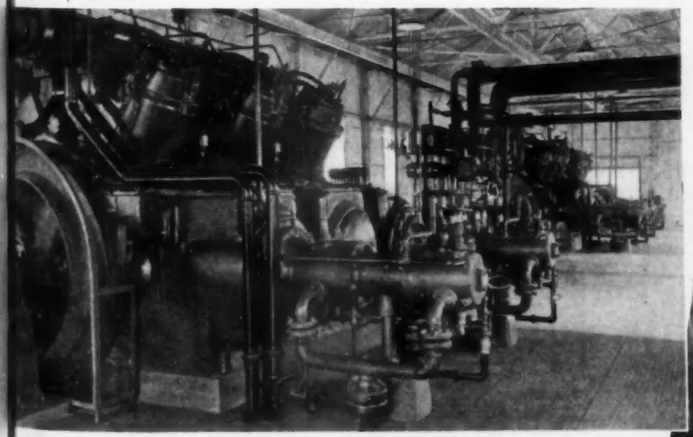
There are good reasons for their success... engineering features by the dozens! If you want details, write for the new Bulletin G-MV.



The first Type G-MV compressor sold to J. S. Abercrombie Company has been followed by thirteen more of these 600-hp units.

The first two G-MV's for Southern Natural Gas Company went into their Selma station. "Southern Natural" has since ordered 10,600 G-MV horsepower.





Four 400-hp Type G-MV's for Tide Water-Seaboard companies have been augmented by two "sixes" and another "four."

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Cost of drilling equipment tends to retard drilling in the Turner Valley field. Rig and pipe for drilling a well, because of freight and taxes, is $31,000 more than cost of the equipment at factories in the United States.

Companies drawing supplies from Southern Ontario are planning extensive exploratory campaigns. Production in 1940 was 767,354 cubic feet more than the previous year and over 2,000,000 cubic feet above 1938. If supplies can be had during the present year consumption should reach a new high figure.

Table 3 shows that in August last year the lowest production for three years was recorded. Official production quantities of natural gas in Canada are included in the data officially supplied by the dominion statistician.

McGillivray Commission

Lasting two years and after an exhaustive inquiry, a commission appointed by the Alberta government concluded its hearings and tabled its findings on the oil industry during 1940. The royal commission consisted of the late Justice A. A. McGillivray of the Supreme Court of Alberta, chairman, and L. R. Lipsett, marketing expert. Witnesses were called from all parts of Canada and the United States. "The field price of crude oil in Turner Valley is in line with world prices; refining and distributing branches of the industry operate efficiently and render an adequate service without levying any undue charges upon the consumer; prices are fair and reasonable and there are no defects either in the organization that would warrant government intervention" reads a passage of the commission's finding. The commission delved into oil industry operations exhaustively and its findings will be an invaluable guide to the industry in Canada for the future.

Alberta Looks Ahead

N. E. Tanner, minister of lands and mines in Alberta announced in March of this year that the government will promote a vigorous development campaign for the exploration of oil during the present and future years. A seven-point program shows the government is fully cognizant of regulations which are retarding progress. It has since been stated by the minister that the government does not intend to enter the oil business. The seven-phase program as issued by the Minister of Lands and Mines is as follows:

TABLE 3

Production of Natural Gas in Canada[1], by months, 1938-1940

MONTH	M Cu. Ft.		
	1940[2]	1939	1938
January	4,865,120	4,094,275	4,065,837
February	4,290,250	4,090,521	4,047,765
March	3,862,351	3,701,907	3,205,357
April	3,186,755	3,132,401	2,953,524
May	2,227,939	2,109,257	2,143,742
June	1,667,608	2,092,327	1,730,328
July	1,637,171	1,743,656	1,595,755
August	1,582,755	1,877,960	1,771,808
September	1,782,514	2,085,564	1,932,791
October	2,543,995	2,804,070	2,523,472
November	3,896,425	3,461,149	3,381,961
December	4,409,617	3,992,059	4,092,451
Total	35,952,500	35,185,146	33,444,791

[1] Does not include Turner Valley gas used for repressuring or waste gas burned in the field.
[2] Subject to revision.

1. Establishment of provincial petroleum reserves in now remote areas of the province to provide for future exploration and development as the areas become more accessible and to prompt a great concentration of exploratory effort in prospective areas more convenient for present development.

2. Revision of regulations covering the reservation of lands for exploratory work, to the extent that the money formerly paid to the province as rentals may now be expended in actual exploratory work, and only such actual work will henceforth suffice to hold the reservation.

3. Revision of the regulations under the Oil and Gas Wells Act, to provide a greater measure of security in the drilling and producing of oil and gas wells, and to promote and assist the co-operative rather than the competitive development of the oil fields of Alberta.

4. Institution of a bonus system for discovery wells, which will exempt such wells from certain royalty payments or will credit the cost of the well against lease rentals.

5. Revision of leasing regulations to provide for consolidation of leases as an aid to drilling and to promote more systematic drilling of leases on Crown lands. The holding of lands for speculative purposes by paying rent will be impossible.

6. Institution of a policy of exploration licensing to facilitate the confidential correlation of exploratory finding as a contribution to the knowledge of the natural resources of the province.

7. Inauguration of a policy of government cooperation with the owners of freehold lands in the development of jointly-owned oil fields.

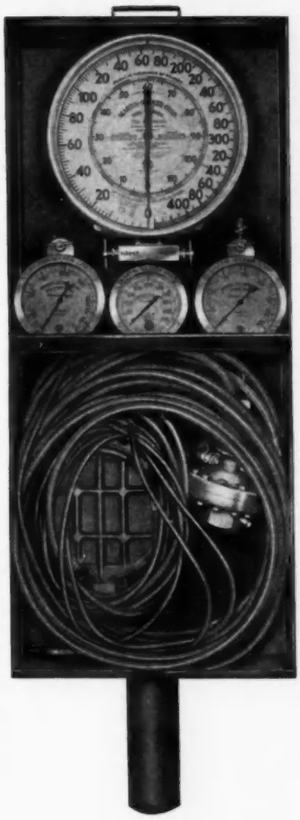
Rationing

Gasoline rationing, while it has been discussed from time to time, has not yet been placed into effect in Canada. The only likely measure is a voluntary endeavor of a gasoline-less Sunday a month. Prospect of reducing much wanted tourist traffic and the doubted actual saving in the long run has held off any official rationing steps. Gasoline is plentiful in Canada and refineries to supply necessary by-products have to produce a large quantity of gasoline regardless of conservation measures.

To enforce rationing, a large staff is required, as has been found

THESE MARTIN-DECKER INSTRUMENTS COVER *every* WEIGHT CONTROL NEED

"SEALTITE" DRILLING CONTROL



Operators who want the most advanced instruments available for drilling control —an instrument that covers every important drilling function smoothly, accurately and reliably from grass roots to bottom—will find the "Sealtite" the outstanding instrument in the field. In one compact unit it has a "Sealtite" temperature corrected, direct-reading weight indicator with supersensitive vernier mechanism . . . "Sealtite" mud pump gauge, torque gauge . . . tachometer . . . and recorder which charts weight, pressure and torque variations while drilling. Gauge capacities will safely handle the highest speeds and pressure of present-day operations—capacity of the weight indicator being sufficient for drilling *20,000 foot wells!* Indirect illumination of the 16" dial face makes night reading easy.

NO FLUID LEAKS

Troublesome pumping up, priming or adjusting of the fluid system has been entirely eliminated in the "Sealtite" Drilling Control. Copper tubing and fittings are replaced by steel-shielded rubber hose and steel connections that are factory filled and sealed *for all time.* The fluid stays in the system even during transportation and storage—can't leak out to cause trouble. Installation is simply a matter of hooking the indicator diaphragm to the deadline and connecting the mud gauge diaphragm to the pump manifold. Back-to-back mounting of recorder and weight indicator further eliminates use of copper tubing and, in addition, leaves storage space in the front of the steel case for hose and diaphragms.

Write for Literature Describing This Instrument.

SLIM-HOLE WEIGHT INDICATOR

A dependable direct-reading portable instrument for deadline installation on shallow-hole to medium drilling jobs. Capacity—75 tons with six lines strung. Special features include an all-bronze gauge case with built-in fluid-filled diaphragm unit—making the instrument unusually compact, light and portable. You get the accuracy and advantages of the hydraulic system, with all the ruggedness of a "cast iron" outfit. A special clamp, operating from the back of the case, permits full use of the dial circumference for the extra-large numerals. It requires no shims or other adjustments for clamping to any line from ⅝" to 1¼" in diameter. The Slim Hole is ideal for use on all small power rigs.

SPECIAL ILLUMINATED WEIGHT INDICATOR

For complete portability, extreme accuracy, sensitivity, ruggedness, capacity and maximum visibility, the Special meets all requirements. With a string-up of ten one-inch lines, this tool-pusher model has a capacity of 315 tons—20% greater than any previous instrument. Yet, for delicate fishing and drilling work, its supersensitive vernier mechanism provides weight indications accurate to the pound. The Special reads directly in thousands of pounds or points.

Built-in illumination of the 16" dial face makes night reading easy and accurate. The Special is compact, weighing only 65 pounds, clamps right on the deadline, and is designed for use on deep drilling jobs where deadline installations are practical.

CLIPPER PORTABLE WEIGHT INDICATOR

An efficient, accurate and dependable instrument for deadline installations on medium-depth drilling jobs. Handles all weight readings up to 243 tons with ten one-inch lines, has a vernier dial hand for extremely sensitive weight readings. Reads directly in thousands of pounds or in points.

The Clipper weighs only 50 pounds —assuring easy portability and eliminating tendency for the instrument to swing on the deadline. Compact, streamlined construction eliminates all projecting parts. Complete factory assembling, calibrating and sealing make adjustments unnecessary and prevent fluid leakage. Since the Clipper must be read across the derrick floor, even greater accuracy will be obtained by installing an instrument such as the "Sealtite" right before the driller.

In addition to the products described here, Martin-Decker also manufactures the following oil field instruments and equipment:

Rate of Penetration Recorder	Unitized Mud Pump Gauge (1,000, 3,000, 5,000 lbs.)
Torque Gauge	Pump Dynamometer
Tachometer	Pull Rod Dynamometer
Tachometer Drive Assemblies	Pulsation Damper
Temperature Recorder	Measuring Line Weight Indicator
Cement Pump Gauge	
Individual Mud Pump Gauge	

Detailed information concerning the instruments described on this page, or information on any other Martin-Decker product, will gladly be furnished on request.

HOME OF THE WEIGHT INDICATOR

MARTIN DECKER CORP.

LONG BEACH, CALIFORNIA

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Pioneers IN MULTIPLE-ZONE PRODUCTION EQUIPMENT

SECURITY ENGINEERING CO., INC. designed, manufactured and installed the equipment used in the earliest multiple-zone production. Today, SECURITY'S fund of knowledge has been amplified by years of continued association with hundreds of multiple-zone problems and installations. Here is a vast experience file upon which to draw in manufacturing packers or other equipment used for modern multiple-zone development.

Drillable SECURALOY, the strong, lightweight alloy, was the ideal safety material for those first pioneering multiple-zone packers and accessories, because it was readily removable at low cost. Now, after years of constant performance, these SECURALOY installations still continue to serve . . . still insure ease of removal. In today's intricate multiple-zone installations, SECURALOY'S drillability is recognized as being *vital!*

SECURITY *Drillable* PACKERS

SECURITY *Drillable* Packers are, to a great degree, responsible for the outstanding performance of the many hundreds of SECURITY multiple-zone installations found throughout the world's oil fields. Engineered to field needs, backed by years of laboratory and field tests, SECURITY *Drillable* Packers and other accessories installed under direct supervision of experienced field men, save you costly trial-and-error experimentation.

Plug Type Tubing Packer Design 972
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Plug Type Tubing Packer with hold-down slips Design 5412
PLUG TYPE TUBING PACKERS
CASING PACKERS
Casing and Tubing Packer Design 1432
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THE SECURITY PROPOSAL . . . SECURITY Engineers will be pleased to assist in preparing detailed multiple-zone installation data, based upon your own exact well conditions.

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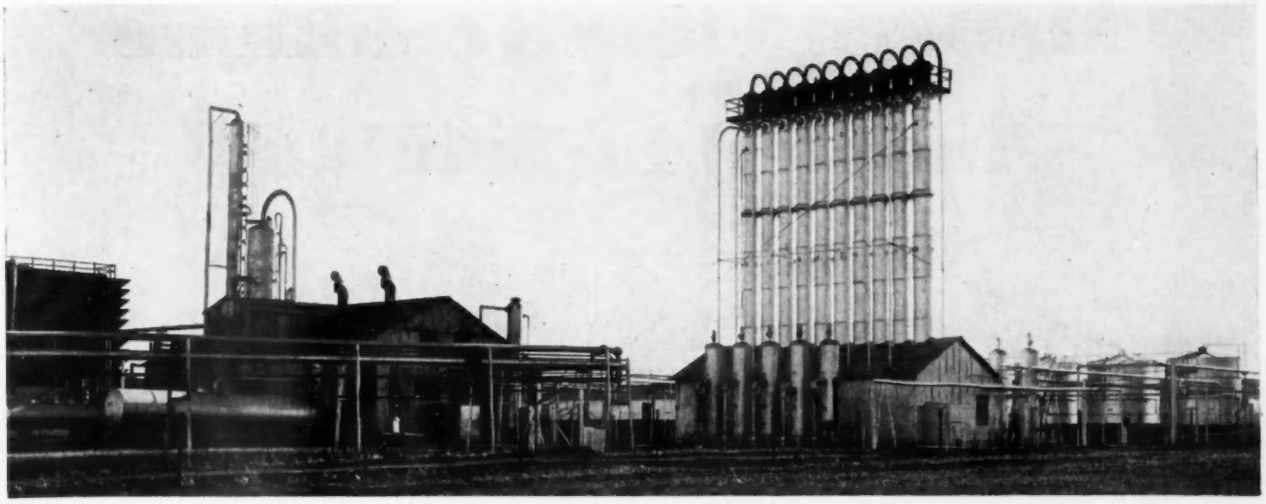
Sievers Reamers ★ Securaloy ★ Security Drillable Products



Royalite Oil Company's No. 2 absorption plant which extracts natural gasoline from gas produced at Turner Valley.

necessary in Great Britain and with the prospect of showing an estimated saving of $10,000,000 annually it is most unlikely that any government action will be taken.

Mis-reading of United States passport regulations kept thousands of tourists out of Canada in 1940 and if gasoline rationing were introduced in any form, tourists will be frightened away; the government realizes this fact and has wisely brought in no legislation.

Royalty Regulations

Regulations governing the sale of oil and gas interests were issued in February of this year after inter-provisional discussion during 1940. Uniform maximum standards affecting the set-up and sale of oil and gas interests were agreed upon by a number of provisional authorities. The main object of these regulations is to make oil investment in Canada a fair risk.

Conclusion

With the government endeavor to conserve foreign exchange it is expected that the industry will experience a record year during 1941. Establishment of a $3,000,000 refinery by British-American Oil Company in Toronto for the production of lubricating oil and the extension of most refineries throughout the Dominion point to this. Every effort is being made to stimulate domestic production and with a ready market for aviation gasoline and other finished products, development should be rapid in the future. The Empire Air Training scheme plans to train 30,000 airmen a year and this in itself is a colossal task. There is conclusive evidence that there will be a consumption increase throughout the dominion. Natural gas is in demand and this indicates another field of essential development during coming months. Discovery of the Princess field has given all wildcatters in Western Canada that stimulation which becomes necessary after a period during which nothing of major importance has occurred.

Sunset at Turner Valley

Modern Field Technique Adopted in Trinidad

EFFICIENCY and stringent economy constitutes the operating order of the day in Trinidad, former prodigal wastes of equipment and materials giving way to modern conservation and field technique ideas.

Most wells drilled during the last six years in Trinidad have been put on a conservative production basis right from the start. That is to say, production from the beginning has been controlled at the well head to allow an output that would insure the most economical ultimate recovery. Of course, official proration does not exist in Trinidad, and it is true that troublesome sand conditions makes the curtailment of production a necessity in many instances. Nevertheless, conservative production rates are considered as keeping the bulk of production on a solid foundation and of building up a readily available reserve for the future. Production sand trouble can be looked upon in one way as a factor which is partially imposing a blessing in disguise on the petroleum resources of Trinidad.

—Photos Courtesy Allen S. Hicks, Hydril Company.

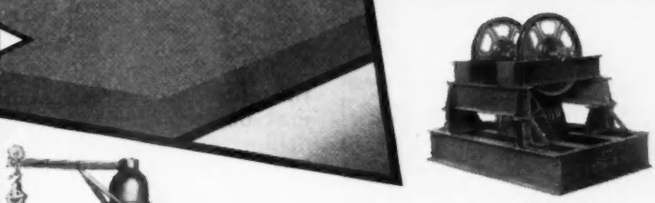
Drilling on the edge of a jungle in Trinidad.

The present tendency is to use natural reservoir energy most efficiently and thus insure that every cubic foot of gas produced brings along the greatest volume of oil possible. Along with this trend goes the long-range repressuring and pressure-maintenance projects, which have been in existence sometime. The wisdom of these practices is being established in some places.

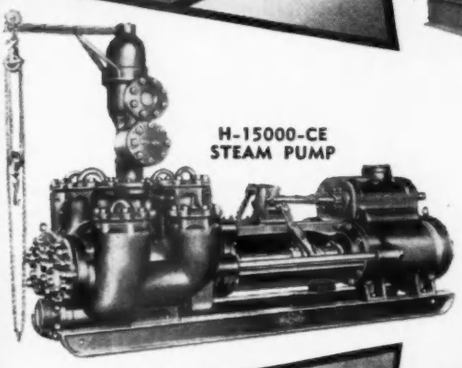
Generally speaking, the standard of efficiency in Trinidad fields is rising rapidly to a new high mark. Make-shift methods are no longer tolerated, and a great deal of time and money is being devoted to research work in all directions to assure that even greater efficiency in both drilling and producing practices will be achieved and maintained as time goes on.

Due to war regulations, the Trinidad Department of Mines is not releasing for publication the usual statistical figures which have enabled THE OIL WEEKLY in the past to present detailed annual reviews of the oil industry in Trinidad. However, it is believed that, when available, official figures for 1939 and 1940 will show that production has continued to increase, perhaps at an even higher rate than the 14-percent gain shown by 1938 over 1937. This would, of course, shatter the rumor of a few years back that Trinidad oil production was due to begin a significant decline.

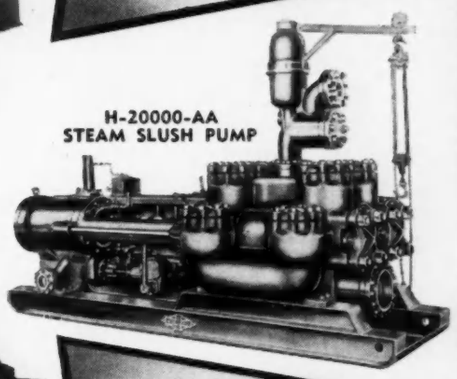
New production is being obtained constantly from the deeper Cruse sands now under exploitation in many fields. Besides, Trinidad has an appreciable back-log of pumping and gas-lift production from a number of the older wells, and the current drilling program no doubt has been more than ade-



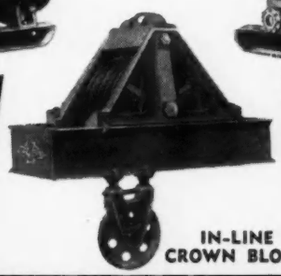
J-7000-B
DOUBLE-DECK
CROWN BLOCK



H-15000-CE
STEAM PUMP



H-20000-AA
STEAM SLUSH PUMP

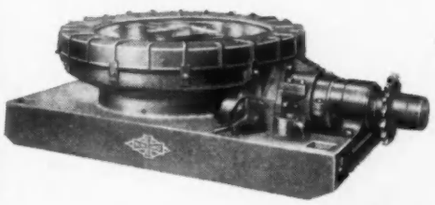


IN-LINE
CROWN BLOCK

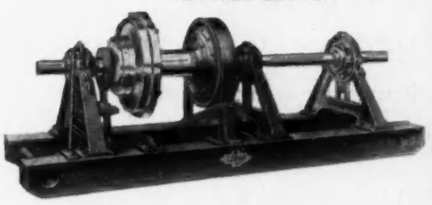
WHELAND

STREAMLINE
TRAVELING BLOCK

A-18000-A
OIL BATH ROTARY



B-7000
REVERSE CLUTCH



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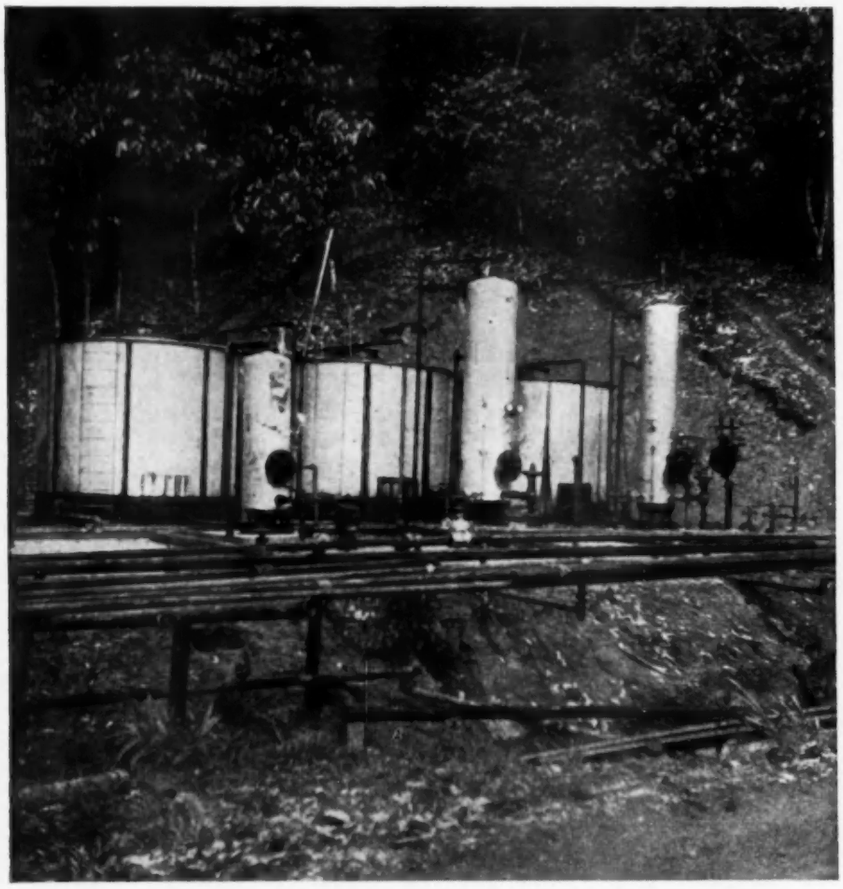
THE WHELAND COMPANY

ROTARY DRILLING EQUIPMENT

Chattanooga, Tenn.



Modern equipment being used in Trinidad has brought with it conservation and improved technique.

quate to offset normal production declines.

The general intensive exploration program during the past few years has not been without fruit, and an appreciable amount of territory has been added to the total of proven acreage existing two years ago.

The general trend of operating practices is following the latest proven advancements in the United States, and it is now customary for some of the larger companies to send representatives of their technical staffs to the United States to study conditions and innovations first hand.

With the advent of exchange control, government permits are necessary for all importations. This has restricted purchases, but the oil industry receives a certain amount of preferential treatment because of its essential requirement for mechanized warfare. However, the bulk of equipment and machinery imports now come from the United States, whereas in the past a sizeable portion came from European countries.

The high-pressure conditions traditionally encountered in Trinidad drilling continue to demand careful attention to mud conditions. Accordingly, the "mud department" today is an elaborate and highly specialized scientific activity. Vibrating screens and mud-laboratory equipment are in evidence everywhere. Trinidad pressure conditions have called for muds weighing as much as 130 pounds per cubic foot.

Straight hole is also a guide word of the local operator, and inclination readings with up-to-date equipment are taken at frequent intervals. Even in some of the deepest holes, permissible deviation is limited to between 2½ and 3 degrees. It has been proved that the time spent in deviation corrections pay full dividends in the end when the time comes to install and maintain pumping equipment or correct faulty pipe settings.

The average drilling depth in Trinidad is between 3000 and 4000 feet, but several wells are going down to the deeper horizons between 6000 and 8000 feet with regularity.

In Trinidad, several "relics" of the older type drilling equipment may be seen alongside the modern drilling rig, but everything is being unitized to save money and rigging time. Long-range exploitation programs enable boiler setups and road facilities to service the maximum number of drilling sites.

Electrical logging is depended upon almost entirely for locating of pay-sand prospects. These electrical logs have done much for the industry in Trinidad, by helping to provide an easier sub-surface correlation in the more than ordinarily complicated geological areas often encountered locally. Ordinary coring is still carried on for study of formation samples and paleontological evidence.

Gun perforating of casing is a practice of considerable usage. It has helped to solve diverse production problems associated with oil- and water-sand complications, thus avoiding the hazards of greatly involved cementing jobs which were a predominant feature of the recent past.

Considerable study is being devoted to the possibility of productive formations being sealed off by heavy mud fluids used in drilling, consequently formation wall scraping has become routine technique in some fields.

Much of the production supervisor's worry is created by the shifting and caving formations, usually accompanied by highly abrasive action of sand grains. Pulling jobs to relieve sand-fouled pumps is a regular nightmare in some of the troublesome areas.

Much experimenting has been done with various types of screen liners and fine-gauge wire-wrapped screen pipe. Recently, attempts were made to pack the production section with prepared gravel. This has not been tried sufficiently to reveal what benefits may result when properly applied.

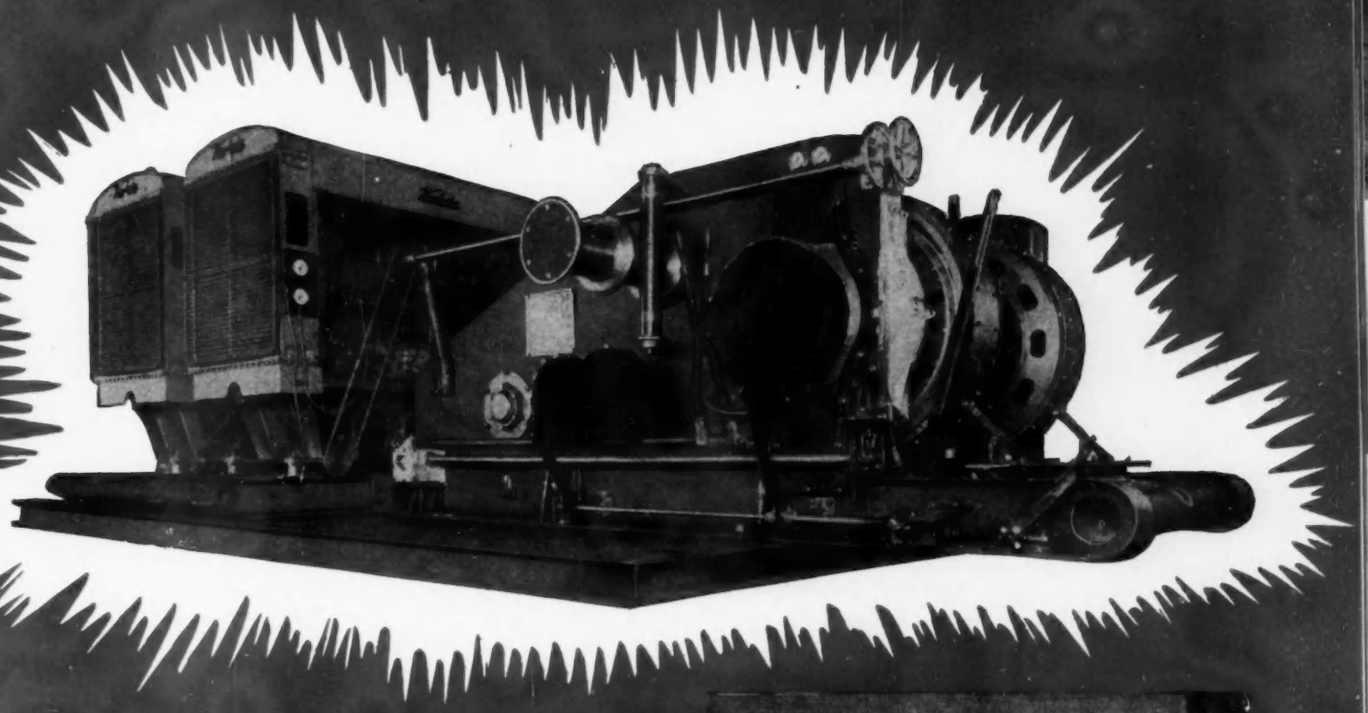
More recently, the pre-packed gravel liner has been considered. Several new wells in different fields are scheduled to be produced with this completion method. These liners will be set either in open hole or within perforated casing.

Some means of relieving the sand condition would be most encouraging for the rehabilitation of old wells that have been shut down because of troubles. It is anticipated that many Trinidad wells will be recompleted someday as a result of completion improvements.

MODEL "CT-5" PORTABLE RIG

HYDRAULIC CONTROLS

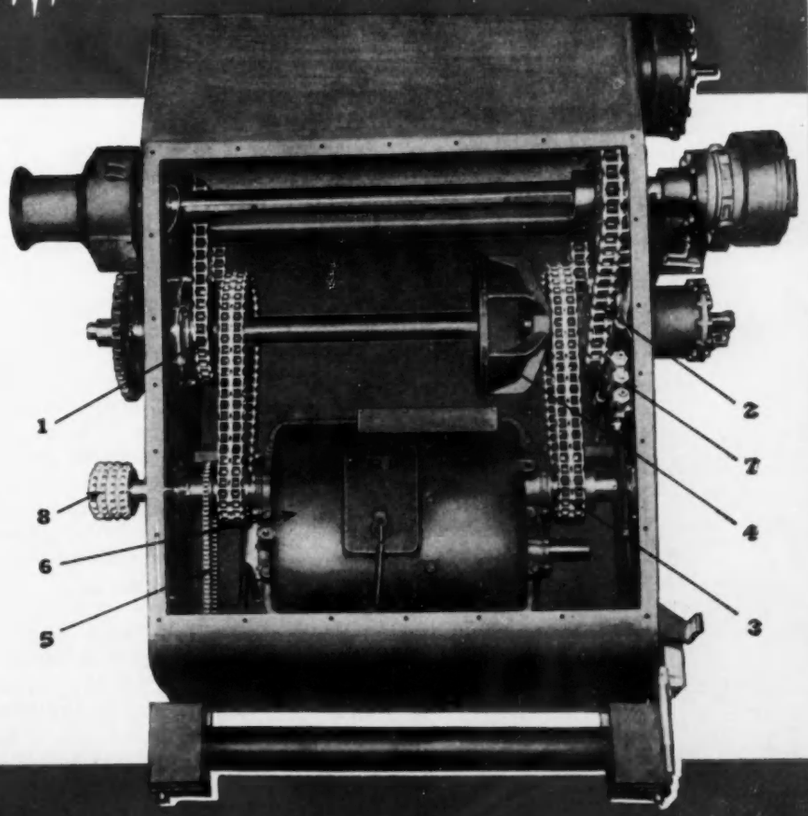
FOR FAST, ECONOMICAL DRILLING



Hydraulic pressure insures safe, positive control of drum and rotary clutches. Safe operation and accuracy are obtained by a simple, balanced valve operated by foot pedal at driller's position, fluid supplied from lubricating source. Foot pedal pressure remains constant whether driller is using maximum or minimum amount of available horsepower. Clutches are cone type, have full pressure engagement and release and require no adjustment; are not affected by expansion or contraction.

The photograph at right shows the interior of the Model CT-5 Draw Works: (1) High speed drum drive independent of transmission; (2) Low speed drum drive, giving 4 forward and 3 reverse speeds to drum; (3) Drive to rotary shaft, providing 4 forward and 3 reverse speeds to rotary table; (4) Cone friction rotary clutch; (5) Oil pump drive independent of transmission speeds; (6) Heavy duty herringbone transmission; (7) Pressure regulator assembly for lubrication system; (8) Transmission input sprocket, quadruple width.

A complete description of this and other Portable Rigs is carried in the 1941 Composite Catalog, or write for descriptive literature.



PORTABLE RIG COMPANY

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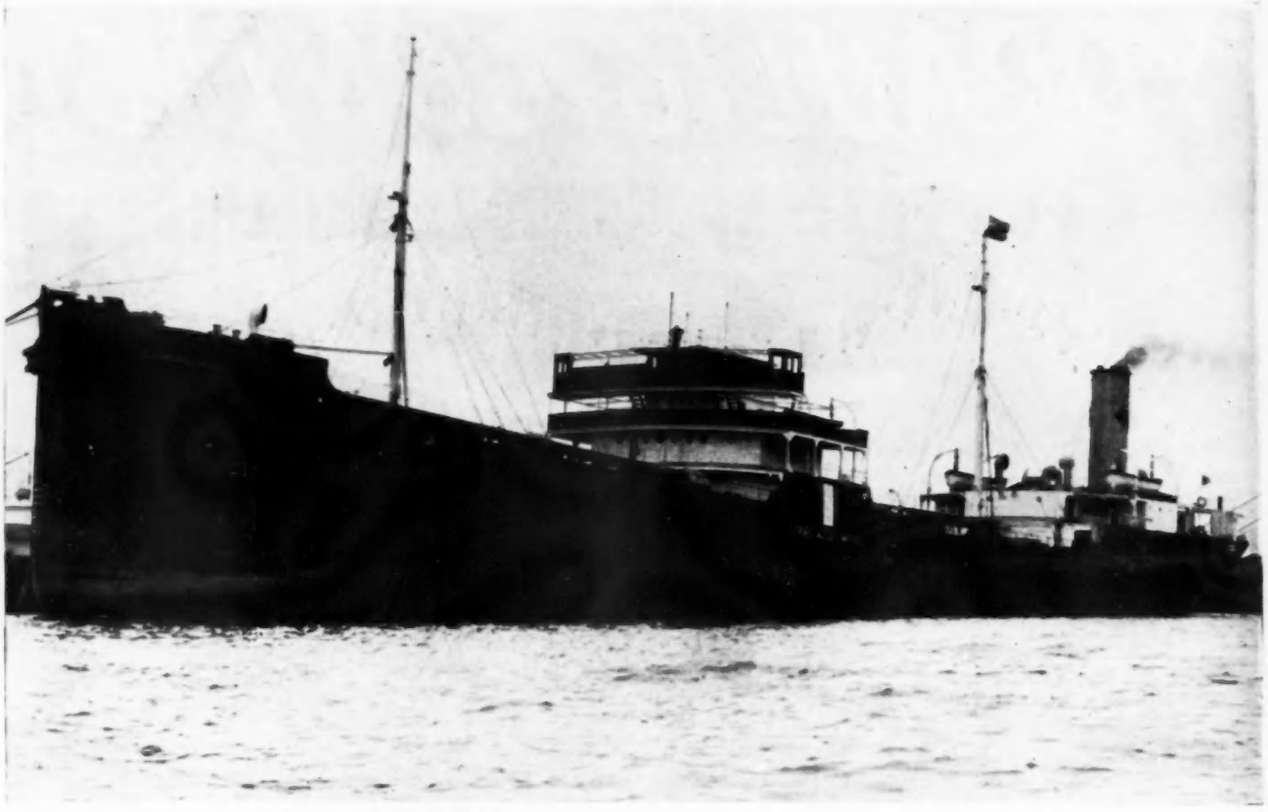


Cerro Azul (65,000 barrels) the best of five tankers in the Mexican fleet.

Japanese Boost Mexican Drilling in 1940

DRILLING operations in Mexico during 1940 showed a total of 44 completions, 19 of which were producers and 25 failures. This was in contrast with 25 completions in 1939, of which 15 were producers and 10 were dry holes. Sixteen of the producers completed in 1940 were oil wells with an aggregate flush production of 50,113 barrels daily. The other 3 were gas wells with a total initial flow of 10,250,000 cubic feet of gas daily.

Only one of the oil producers, a 200-barrel well, was brought in by a private company; this being by Compania Petrolera Veracruzana, S. A., a Japanese-controlled firm. Two of the 3 gas wells were private enterprises, one by F. C. Martinez and the other by Ohio-Mex.

The Japanese Compania Petrolera Veracruzana, which was granted drilling rights during 1940 on considerable acreage in the Northern District, drilled 13 holes in this region and 2 others in the Isthmus of Tehauntepec. Besides the 200-barrel well, the company completed 3 operations in the Northern District for 15 barrels each per day. These, however, are considered non-commercial.

Mexico's cumulative record of completions, up to January 1, 1941, shows 6572 tests had been finished, of which 2616 have been producers, including gas, and 3956 have been dry holes.

Daily-average production of the country during 1940 was around 120,000 barrels, total yield for the year being about 44,000,000 barrels. This compares with a daily-average yield of 117,200 barrels in 1939, with 104,800 barrels for 1938, and with 127,900 barrels in 1937. The latter being the figure under the final full year of private company operation.

The rich Poza Rica field contributed approximately 28,000,000 of the country's 44,000,000 barrel yield. The Northern and Isthmus fields were next in volume, with the Southern fields following.

Stocks reported on hand November 30, 1940, latest date on which data are available, totaled approximately 13,750,000 barrels. Of this, 4,310,000 barrels was light crude, 3,050,000 barrels heavy crude, and the remainder miscellaneous. The government, that is Petroleos

Summary of Production and Development in Mexico, 1939-1940

	Number Wells Drilling	Number Wells Flowing	Total Wells Drilled	Wells Completed Jan.-Dec., 1940	1939		1940		Total Through Dec. 31, 1940
					Total Production	Daily Average	Total Production	Daily Average	
Northern	2	660	4,343	26	5,516,000	15,100	6,190,000	16,900	752,201,000
Southern	....	262	1,304	....	4,626,000	12,700	3,770,000	10,300	1,027,770,000
Pozo Rica	3	30	47	8	26,322,000	72,100	28,360,000	77,500	124,189,000
Isthmus	4	220	675	10	6,316,000	17,300	5,600,000	15,300	111,248,000
Others	....	....	203	....	.....	.....	.....	.....	.....
Total	9	1,172	6,572	44	42,780,000	117,200	43,920,000	120,000	2,015,408,000

Mexicanos, held approximately 10,000,000 barrels of the stocks, with the remainder in the hands of private companies, including International, Gulf, New England, Norma (Texas) and Kern-Mex (Seaboard).

Of the 6,390,000 barrels of miscellaneous products in storage, fuel oil accounted for 1,835,000 barrels, gas oil 1,480,000 barrels and unfinished and refined gasoline 1,250,000 barrels.

Mexican petroleum exports for 1940 totaled 20,555,000 barrels, representing a gain of approximately 500,000 barrels over 1939. Since there was no increase in storage inventories during the year, it would indicate that domestic consumption amounted to something like 23,445,000 barrels. Since expropriation there has been a complete reversal of the relationship between crude and product exports. Crude made up 71 percent and products 29 percent of the export total in 1940, whereas these percentages were exactly reversed in 1937 when the foreign companies were in control. Thus it is shown that Mexico is not refining as much of its oil as it did previously. Of the total exports since expropriation, the government has consigned 47,654,000 barrels and private interests 1,960,000 barrels.

The United States was by far the heaviest purchaser of Mexican petroleum and products during 1940, exports to that country being 15,721,000 barrels or 76 percent of the total. This was equivalent to 43,000 barrels daily. Italy was second with 2,961,000 barrels, all accounted for in the first six months of the year before the British extended its blockade to the Mediterranean. Japan was third with 760,200 barrels, which compared with 188,300 barrels taken during 1939 and 233,300 barrels in 1938.

Total exports to Germany from date of expropriation, March 18, 1938, through August, 1939, when the war started, totaled approximately 11,500,000 barrels. No shipments have been made since Germany went to war.

The following shows drilling activities as of January 1, 1941

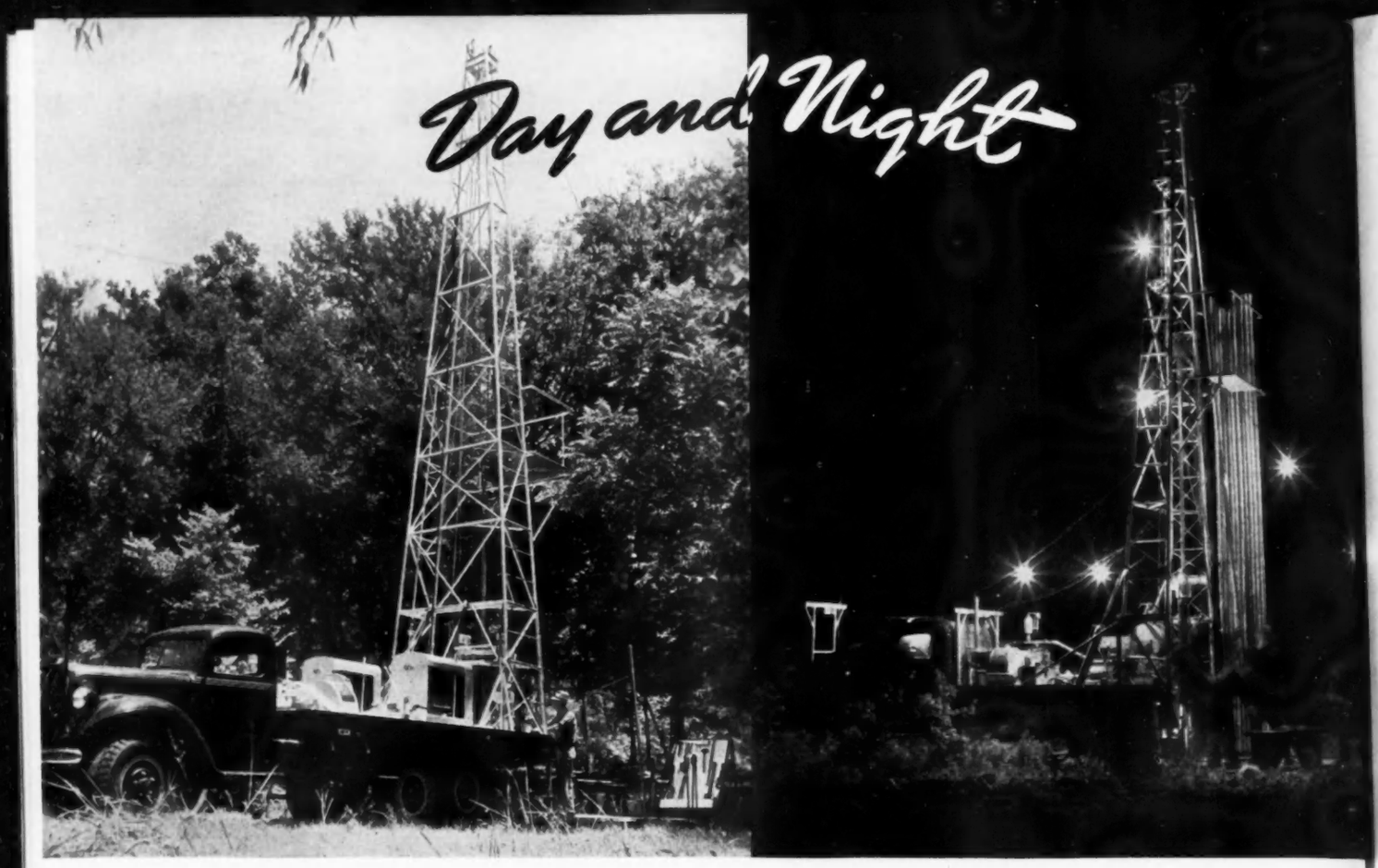
		Drilling	Suspended	Locations	Total
Chihuahua	A. G. P. N. (Govt.)	..	1	..	1
Northern District	Arriaga	..	1	..	1
	Moreno	..	1	..	1
	Pet. de. Mexico	..	1	..	1
	Pemex (Govt.)	2	3	4	9
	Veracruzana (Jap.)	..	2	..	2
Southern District	A. G. P. N. (Govt.)	..	1	..	1
	Pet. de Mexico	..	1	..	1
Poza Rica	A. G. P. N. (Govt.)	..	..	1	1
	Pemex (Govt.)	3	1	2	6
Isthmus	Pemex (Govt.)	4	3	15	22
Total		9	15	22	46

Well Completions in Mexico by Districts During 1940

DISTRICT	Producers	Failures	Total	Field
Northern Tamaulipas:				
A. G. P. N. (Govt.)	1 (gas)	2	3	Laredo.
F. Martinez	1 (gas)	..	1	Mier.
Ohio-Mex	1 (gas)	1	2	Mier.
	3	3	6	
Northern District:				
Sou. Tamaulipas:				
A. Dahlgren	..	1	1	Altamira.
Veracruzana (Jap.)	1	7	8	Jopoy.
Tampico-Panuco:				
Pemex (Govt.)	1	4	5	Chapacao.
Alex Smith	..	1	1	Chapacao.
Veracruzana (Jap.)	..	5	5	Tamismolon, Ela.
	2	18	20	
Poza Rica-Mecatepec:				
A. G. P. N. (Govt.)	3	..	3	Poza Rica.
Pemex (Govt.)	4	1	5	Poza Rica.
	7	1	8	
Isthmus of Tehauntepec:				
Saline Basis:				
Pemex (Govt.)	7	1	8	El Plan, Burro.
Veracruzana (Jap.)	..	2	2	San Carlos.
	7	3	10	
Total	19	25	44	

Comparative well completions data for 1940 and 1939, with summary of wells completed in Mexico up to January 1, 1941

	1940			1939			Total To Jan. 1, 1941		
	Prod.	Fail.	Total	Prod.	Fail.	Total	Prod.	Fail.	Total
Lower California	....	....	....	....	....	....	....	3	3
Chihuahua	....	....	....	....	....	....	....	3	3
Coahuila	....	....	....	....	....	....	....	22	22
Nuevo Leon	....	....	....	....	....	....	....	23	23
North. Tamaulipas	3	3	6	....	....	....	15	24	39
Cent. Tamaulipas	....	....	....	....	....	....	....	12	12
Northern District:									
Sou. Tamaulipas	1	8	9	....	1	1	17	155	172
Tampico-Panuco	1	10	11	3	4	7	1602	2569	4171
Total Northern District	2	18	20	3	5	8	1619	2724	4343
Southern District:									
Main Belt (Golden Lane)	....	....	....	....	....	....	527	526	1053
Ozulama-Tantoyuca	....	....	....	....	....	....	3	49	52
Tempoal	....	....	....	....	1	1	....	24	24
East Flank	....	....	....	....	....	....	38	102	140
Western Group	....	....	....	....	....	....	1	17	18
Tlacolula-Metlaltoyuca	....	....	....	....	....	....	1	16	17
Total Southern District	....	....	....	....	1	1	570	734	1304
Poza Rica-Mecatepec	7	1	8	6	2	8	37	10	47
Furbero-Papantla	....	....	....	....	....	....	16	62	78
Veracruz Embayment	....	....	....	....	....	....	....	3	3
Isthmus of Tehauntepec:									
Saline Basin	7	3	10	6	2	8	346	271	617
Tabasco	....	....	....	....	....	....	8	26	34
Chiapas	....	....	....	....	....	....	5	19	24
Total Isthmus	7	3	10	6	2	8	359	316	675
Oaxaca	....	....	....	....	....	....	....	6	6
Yucatan	....	....	....	....	....	....	....	6	6
Valley of Mexico	....	....	....	....	....	....	....	8	8
Total	19	25	44	15	10	25	2616	3956	6572



"OIL IS WHERE YOU FIND IT"

Mother Nature guards her treasures well. How well—only the man who is actually engaged in the finding and production of oil can know.

To the outsider, it may be Drama, with a capital "D." To the man on the job it is just hard work. There's not much "romance" in piloting a truck through sand or mud up to the hubs, or in "fishing" for tools in a half-completed well. Not to the man who has the job to do!

No, it's no picnic to start off across country on a geological or geophysical survey, even with the best automotive equipment available. You may have to climb a mountain or ford a river before you get back. And the same thing applies to hauling in well rigs, machinery, pipe and supplies when you start "making hole."

That is why Marmon-Herrington *All-Wheel-Drive* converted Fords and Heavy Duty *All-Wheel-Drive* Trucks are so well known and appreciated by oil men all over the world. You know you are going to get there and back—no matter what kind of terrain you have to cover, when all four, or all six wheels are *sharing the work as well as sharing the load.*

No other vehicles on wheels have such amazing ability to go into seemingly "impossible" places and come out under their own power. No others have the necessary *traction* to haul heavy loads where standard vehicles would bog down. The *All-Wheel-Drive* converted Ford passenger cars and commercial cars are unsurpassed for personal transportation. Larger *All-Wheel-Drive* Ford trucks are used for mounting test drilling and seismographic equipment, and for general hauling. Marmon-Herrington Heavy Duty *All-Wheel-Drives,* with capacities up to 35 tons, are especially useful in hauling heavy machinery and pipe "across country."

Let us send you the new issue of the Marmon-Herrington Pictorial News—and tell you more about the profitable use of these vehicles in oil field service. Cable address, MARTON, Indianapolis, Indiana, U.S.A.

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Foreign Oil Field Life

Venezuela Style

By
RAY L. DUDLEY
Publisher

MOST PEOPLE who have not visited the oil camps of the tropics conjure up a picture which is entirely erroneous when such camp life is mentioned.

They have a mental picture of terrific heat, of unsanitary conditions, of a life of deadly monotony, continual rains, insects, fevers. As a matter of fact, the real situation is entirely different, and camp life in the tropics actually affords comforts and recreations not available to many employees in the United States performing duties similar to those performed in the tropics.

There is a sound reason back of this. The expense of operating in the tropics is high. It costs a great deal of money to move new men from abroad to the job, and efficient operation is dependent upon a healthy physical and mental condition to such an extent that, aside from humanitarian considerations, the oil companies find it worthwhile to go to great lengths to keep the employees happy.

This discussion deals only with the camps of Venezuela, and because of space limitations, may describe only those camps of a permanent nature. Geophysical camps are transitory, followed by wildcat camps which in turn are followed by the beginning of permanent camps if the wildcat well is successful.

San Joaquin, Standard Oil Company of Venezuela's camp for two fields in Eastern Venezuela, probably is typical of such a transition camp. Here is the beginning of a town, a steel mess hall building which also is the movie house, offices of a type similar to oil-field offices in the United States, a club house and the living quarters of the bachelor and married staff.

The bachelor houses, and the married-couple houses which are somewhat larger, are comfortable. A bachelor house is a two-bedroom building with a wooden floor, wooden walls up a few feet, a screened, hinged window running the full length of the building, with a tent roof. The houses are built on "stilts" several feet off the ground as protection against termites, ants, etc. Between the bedrooms are located a clothing room, insect proof in which an electric light burns continuously to eliminate mildew, and a lavatory, bath and toilet.

Each end has an entrance through a screened porch. This screen entrance, from which one passes through a second screened door into the house, is an invariable specification of the Health Department of the Standard Oil Company of New Jersey for tropical camp buildings, and it was said only the board of directors of the company can change or override a health department regulation, once it is approved by the company.

The food in such camps is invariably good. We found it so at San Joaquin and in similar camps maintained by other companies. Well do we remember the breakfasts at Mene Grande Oil Company's camp at Puerta La Cruz, on Guanta Bay, an indentation of the blue Caribbean. The long mess tent was opened early — and it closed promptly. It was no place for the man who wanted to lie abed late. But when one entered the mess tent and looked at the array of food he was glad he had arisen early. We had many meals there, but the breakfasts stick out in our mind — orange juice in pitchers, grapefruit, cereal: cooked and uncooked, bacon, ham and eggs, hot cakes, toast or rolls, delicious syrup, coffee, cocoa. Only milk was missing, and if you insisted on milk you could get a product made from powdered milk. The employee or visitor could choose any or all of the menu — and we observed a number who took "seconds."

Life in a Permanent Camp

When you enter a permanent camp like Caripito, San Tome, Quire Quire, Lagunillas, Cabimas or Mene Grande, you have the feeling that you have really gotten somewhere!

Much has been written about Caripito. It has been literally carved out of the jungle of Eastern Venezuela. Situated on hills, with purple-blue mountains lying in a crescent in the distance, surrounded by the lush tropical growth of the jungle, Caripito is really something to see when you enter it from the road leading through the jungle from the airport. And after you have been there some time, it is still something to see.

On one side of the camp will be found the offices, warehouse, etc. Caripito is headquarters for Standard Oil Company of Venezuela for Eastern Venezuela and is one of the biggest permanent camps in the republic. On the other side of the camp will be found the residences, a golf course winding in and around some of the houses of the foreign staff. Still farther south will be found the homes of the Venezuelan workers where every care has been taken for comfort, convenience and sanitation.

The houses, both for staff and laborer, are built of baked hollow tile, covered with white corrugated iron roofs. Bougainvillea, and many varieties of hibiscus thrive in Caripito and are found in profusion around the homes. The grass is eter-

nally green and in the daytime there is the unending whirr of the lawnmower keeping the grass in trim.

Caripito is really a city. It has a lighting system which we would guess would be capable of taking care of a city of possibly 40,000 to 50,000, because in addition to the homes, offices, etc., it supplies power for shops and a fine modern refinery.

Large office buildings with deep overhanging eaves are not yet air conditioned, but are comfortable even in the hottest part of the year. There are many windows. Caripito employees are most sensible in their dress. White duck is worn by most of the office workers here, and a coat at the office is most unusual.

A modern and spacious club building is a gathering point for the staff employees and families. It has all of the accommodations of a good club in the United States, and on movie night, when good films, practically as up-to-date as are to be found in the United States are shown, the big lounge is turned into a movie room, comfortable chairs are grouped by friends and families, and there is a general outpouring of Caripitians to the movie.

The nine-hole golf course is a sporty one, the fairways always green (there are frequent showers — we observed most of them in the morning, even in the dry season). Caripito golf course is one of two courses in Venezuela having grass greens.

Office hours begin early and the offices are closed early enough for golf players to get in nine holes easily. As a result Caripito boasts some excellent golfers. Then there are tennis courts, and other sports to tempt those who do not play golf, but we suspect that Caripito's population has a larger percentage of golf players, men and women, than any city of similar size in the United States.

Space does not permit the description in detail of the homes. They have every convenience, sanitary sewage as well managed as will be found anywhere, electric lights, radio (short wave), refrigeration, gas. In many of them the floors are of beautiful colored tile. The woodwork is mahogany. They are furnished just about as similar homes would be in the United States.

Women of Caripito, as is the case with the women in the other permanent camps, have a great deal of time, probably more than they realize. They are interested in the various drives for war relief, they take a genuine interest in the good school maintained, most of them are excellent bridge players, and it is a poor day which does not have several bridge parties, luncheons, teas and dinners scheduled.

Most of the food comes from the company commissary — a large one-story building in which most of the necessities of the camp can be purchased. Vegetables, generally speaking, are imported from the United States. Frozen vegetables a year ago were beginning to take hold in a substantial manner. The company has employed an agricultural college graduate to develop an experimental truck farm. Insect pests and the peculiar red soil of Caripito, which grows such luxuriant tropical vegetation, are not kind to ordinary North American vegetables. The company operates a sanitary abbatoir, providing meat for the camp.

At Caripito is Standard Oil Company of Venezuela's principal hospital for Eastern Venezuela. There are other hospitals in Eastern Venezuela operated by the company, but the one at Caripito is the largest. It would do credit to a city of 50,000. Built to catch every breeze, with verandas outside to cut down the tropic glare, it is comfortable, ably staffed and equipped with the latest hospital accouterments.

Caripito camp has all of the departments of a well organized city, differing in that the manager of the company and his assistant must assume the duties of mayor, street and bridge commissioners, health department, police department, and we sometimes suspect that they must undertake some of the duties ordinarily attributed to Dorothy Dix!

In this connection, it should be remembered that the Venezuelan employees, who greatly outnumber the foreign staff (mostly Americans) are provided with comfortable homes, also of hollow tile, homes which would compare *most favorably* with the homes occupied by Americans in the United States performing similar duties. These employees have accommodations and benefits which make working for an oil company a most desirable thing: homes, sanitary provisions, health assistance, hospitalization, commissaries providing food at less than current cost, recreation — and a church built by the company some time ago. And it should be said that the response of the employees has been splendid. The effect of oil operations on the life of Venezuela has been marked and is appreciated.

Another great camp, now under construction, is that of Mene Grande Oil Company at San Tome, near the Oficina field, on the llanos of Eastern Venezuela. It will be headquarters for the company in Eastern Venezuela.

At San Tome, the houses are of insulated steel panel construction, coated with stucco, and roofed with corrugated asbestos. The floors are of terrazzo, the window casings of steel. As a matter of fact, there is not an ounce of wood used in their construction. San Tome is located some distance from a considerable river, and on ground which, until the camp started, was grazing ground which had been burned over once a year for generations. Mene Grande Oil Company is having not only to build a town, but to bring in soil and induce to grow many shrubs which have never had an opportunity to grow there before because of the extreme dryness of the dry season. Ultimately, it should bloom like the desert in spring.

San Tome is laid out on generous specifications. Its mess hall will seat more than 200 people at one time. Its kitchen is something to cause envy to the chef of a first class hotel. We had hoped to have pictures of San Tome, but they did not arrive in time. We want to see it again when the landscape plan we saw there is fully put into effect — sweeping drives, lined with trees, a park in the center, a thriving city where formerly only the cattle of the llanos trod.

Western Venezuela, the Maracaibo district in particular, has a number of important "camps." In the city of Maracaibo are three large ones, that of Caribbean Petroleum Company, Lago Petroleum Corporation (Standard Oil Company of New Jersey) and Mene Grande Oil Company. The latter camp is the oldest in Venezuela and is built with many of its houses within stone's throw of the lake. Stately cocoanut

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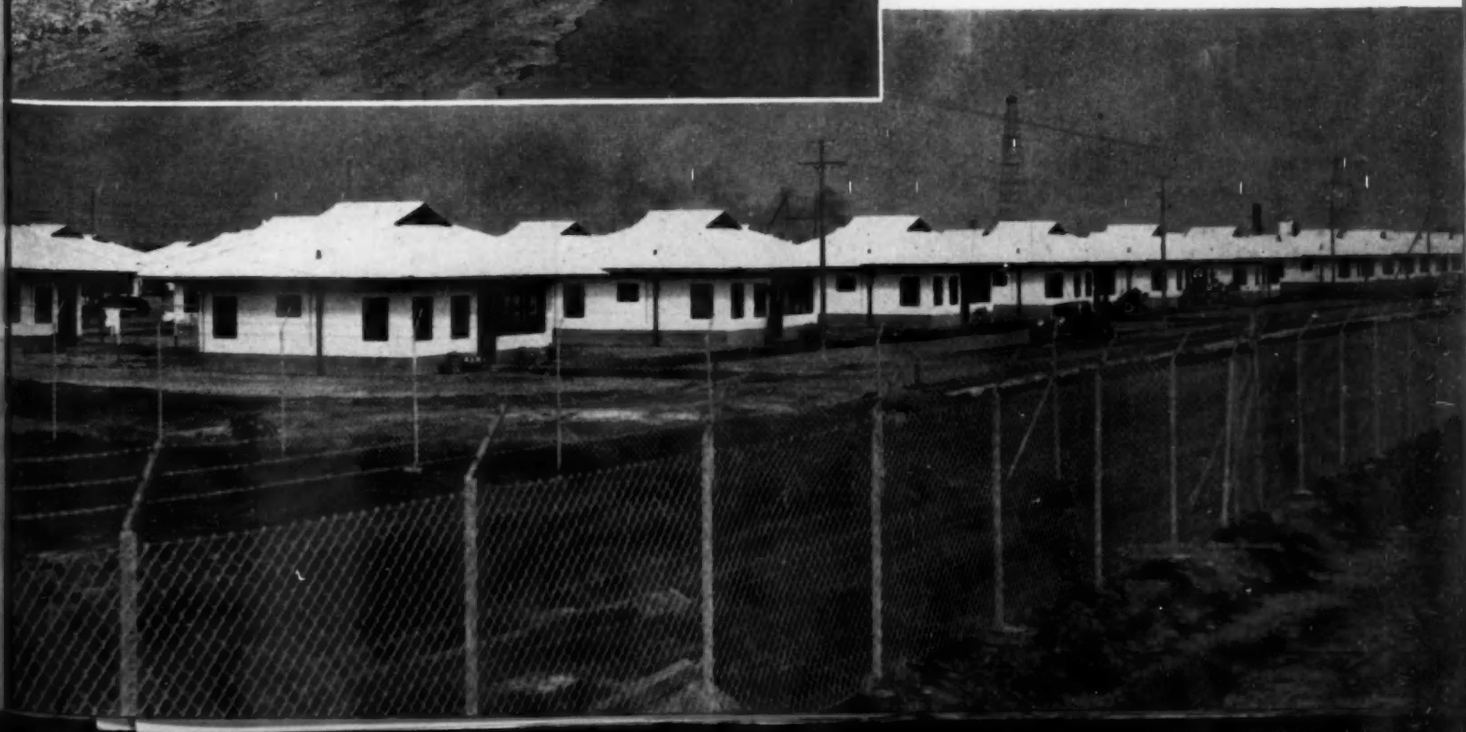
Above is a type of family house in the Standard "camp" at Caripito, Venezuela. Some of the houses at Caripito are built of wood, although most of them are of hollow tile.

At left a family house at Quire Quire. Note the construction on "stilts," designed for coolness and as protection against termites and ants. Quire Quire is the first permanent camp of Standard Oil Company of Venezuela in Eastern Venezuela and the palms have had a chance to get some growth.

Below a junior staff camp of Venezuelan Oil Concessions at Lagunillas. The company has large properties in this area and its camp is a large one.



A four-room bachelor house at Caripito camp.

palms mark it from a distance. The houses are of wooden construction, with unusual precautions against ants and insects.

Caribbean Petroleum Company and Lago Petroleum Corporation camps are more nearly identified with the city, and have the appearance of stucco bungalows and two-story houses to be found in the excellent residential sections of Southwestern or Californian cities. Clubs, swimming pools, hospitals are of the best. And many of the employees belong to the Maracaibo Golf Club, the membership of which is made up largely of oil company employees. The social life of the three camps is fairly closely intermingled, although company parties, barbecues, and dinners are frequent affairs. Across the lake will be found the large field camps of Cabimas, Lagunillas and Mene Grande.

Probably the best picture of camp life is to be found in a letter from an employee of Caribbean living at Lagunillas to a person living in the United States, setting out his daily routine. Here is the letter, with some personal details eliminated:

"When one considers that we live

Continued next page

Lagunillas staff and labor camps, on the East shore of Lake Maracaibo, Lago Petroleum Corporation.

Another type of residence at Cari

here in a climate totally different to that which Americans and Europeans alike are accustomed one cannot but be surprised at the high standard of health maintained among the staff. While a great deal in this respect, of course, depends largely on the individual it is also in no small measure attributable to the efforts of the organization here which by extensive reclamation and drainage works and the provision of excellent housing facilities has converted, in a comparatively short time, what was little better than a vast swamp into a healthy township. Admittedly one does not have to venture far afield to encounter virgin territory and all that goes with it.

"While I have stressed the generally excellent health enjoyed by our staff it should not be construed that there is no sickness. Apart from occasional work accidents and sickness peculiar to the tropics most of the ailments encountered among folks at home make their appearance here as they do in all communities. To handle these we have a field hospital with some 60 or 70 beds for in-patients while for first-aid treatment and cases not calling for hospitalization there are excellent fully equipped dispensaries located at central points throughout the fields. The

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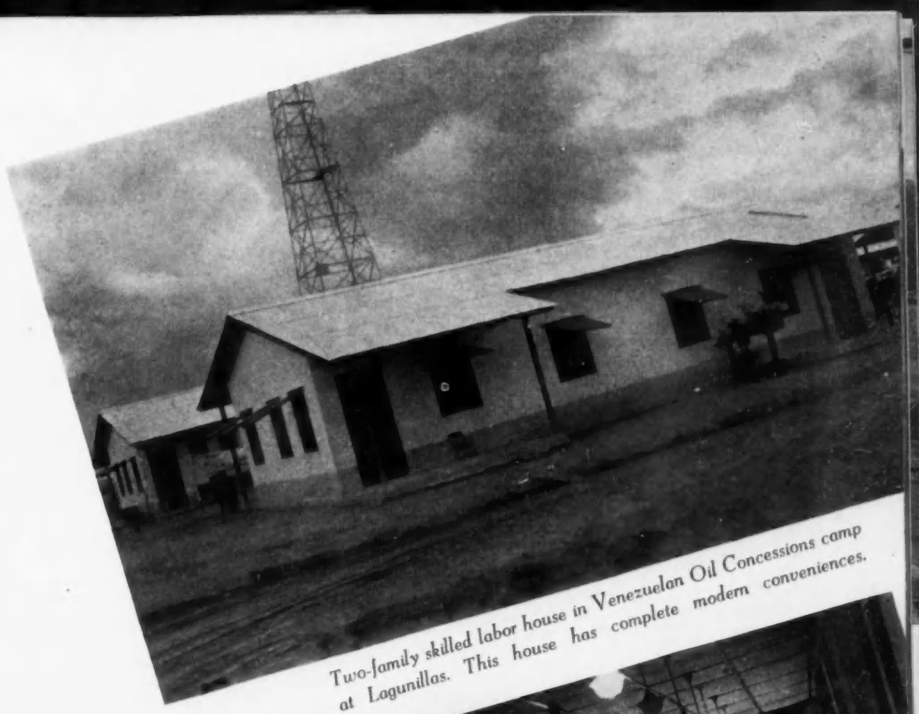
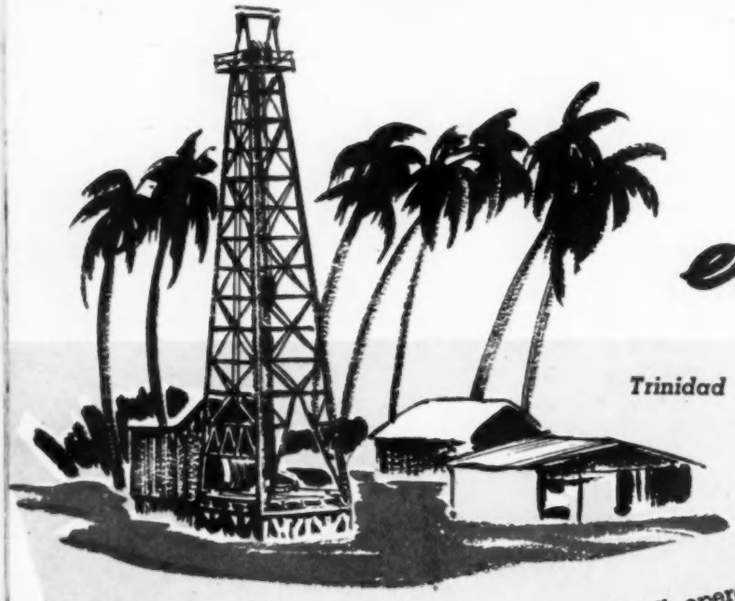


Two-family skilled labor house in Venezuelan Oil Concessions camp at Lagunillas. This house has complete modern conveniences.

At right is the interior of the mess hall at Caripito. The bachelor staff uses this mess hall.

Below is another view of labor camp at Lagunillas.

There is a type of *every requirement*



Trinidad

TO PROPERLY SERVE the interests of oil operators in Latin America, Baker Oil Tools, Inc. has built up over a period of years, an Export Division staffed with personnel having a first-hand knowledge of actual field problems and operating conditions. Baker equipment intended for consumption in Latin America is accordingly designed and manufactured with those problems and conditions in mind. Every export order not only receives preferred attention, but every phase is carefully analyzed and is under constant supervision.

It's a mighty good feeling, when you are thousands of miles from source of supply, to know you will receive exactly the equipment ordered, and that it will be capable of safely and efficiently performing the job for which it is intended . . . and that is the assurance you have when you specify BAKER.

WHETHER the problem is one of guiding and floating a long and heavy string of casing, or that of landing and cementing a string in shallow depths, there is a type of Baker Cement Guiding, Floating, Cementing Equipment to do the job . . . and do it SAFELY, EFFICIENTLY and ECONOMICALLY.

BAKER CEMENT FLOAT SHOE

As illustrated in Fig. 1 the internal construction of the Baker Cement Float Shoe consists entirely of Baker-Formula Concrete and a small amount of Bakelite . . . both materials being easily drilled up and circulated out of the hole. It is also provided with the efficient Baker BALL-TYPE Valve, with buoyant Bakelite Ball, which instantly double-seals against a narrow rubber seat at the slightest reversal of pressure. Like all Baker Floating Units, it combines in a perfectly balanced combination the three Baker features of STRENGTH-VALVE EFFICIENCY-DRILLABILITY.

BAKER CEMENT GUIDE CASING SHOE

The internal construction of this unit (Fig. 2) consists entirely of Baker-Formula Concrete, providing the important advantages of Strength and Drillability. It is usually used in combination with one or more Baker Cement Float Collars.

BAKER CEMENT FLOAT COLLAR

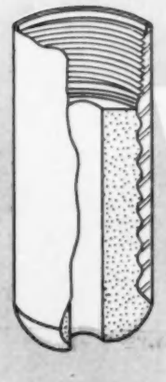
Many operators when setting casing, prefer to have the principal "float valve" in a Collar, positioned one or two joints from the bottom . . . and the Baker Cement Float Collar (Fig. 3) provides this feature. It also serves as a stop for the cementing plugs, thus retaining cement tailings inside the casing and insuring a better consistency of cement outside of the shoe and casing.

This unit has the same internal construction as the Baker Cement Float Shoe.

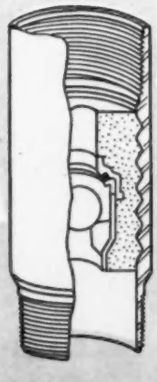
BAKER CEMENT WASH-DOWN WHIRLER FLOAT SHOE

This shoe (Fig. 4), the most efficient cementing unit of its kind yet devised, embodies all of the features essen-

1
Baker Cement Float Shoe
Product No. 100



2
Baker Cement Guide Casing Shoe
Product No. 102



3
Baker Cement Float Collar with Male and Female Threads
Product No. 101 M &

THE

Solution to many sub-surface problems

BAKER MODEL "K" CEMENT RETAINER AND CASING BRIDGE PLUG

(with Circulation Joint and Circulation Joint Bottom Sub)

The Baker Model "K" Cement Retainer solves many usual and unusual cementing problems by providing a safe, sure means of placing cement through tubing or drill pipe at the point where it will be really effective around the shoe; at any predetermined place behind casing or liner; or in open hole immediately below the pipe. It minimizes the danger of sticking or plugging tubing or drill pipe with the "tubing method" of cementing; it is adaptable to any pressures within the safety factors of the casing, and is particularly suitable when circulation is difficult or impossible to obtain.

The Cement Retainer is being widely used for all kinds of general and specific types of cementing jobs. Many operators, therefore, look first to this tool to meet the problems that arise in drilling, completing and maintaining wells which may be saved by the use of cement... for the Cement Retainer permits the placing of cement where it must go under nearly every condition encountered.

The Baker Model "K" Cement Retainer Assembly (as illustrated) consists of the Cement Retainer proper and the Circulation Joint together with a Sub (Circulation Joint Bottom Sub). The bottom (pin end) of the Sub carries left-hand, square threads which are screwed into the top of the Retainer Body to provide quick and easy release from the Retainer, which alone is left in the well. The upper (box) end of the Sub provides connection to the Mandrel of the Circulation Joint. The top of the Circulation Joint in turn is screwed into the bottom of the running-in string, either tubing or drill pipe. The Circulation Joint insures a relief from all strains when unscrewing from the Retainer and also furnishes a means of bleeding off fluid or cement from the tubing or drill pipe at any time during operations.

While the most extensive use of the Baker Cement Retainer is for effective cementing of most every sub-surface condition encountered, it is also widely used as a Bridge Plug in casing or liner. When set as such, at any point, it packs off securely to prevent the movement of liquid or gas either up or down the hole.

BAKER ★ SAVE A WELL ★ CEMENT RETAINER

Applications

Practical field applications for the Baker Cement Retainer include:

Recementing
Cementing Behind Sections of Pipe
Reducing Gas/Oil Ratios
Plugging Off Bottom Fluids
Plugging Back to Upper Zones
Testing Upper Cased Formations
Squeeze Jobs
Cementing Off to Perforate for Production
Cementing Bad Pipe
Cementing Two Strings Together
Cementing Low-Pressure Zones
Use of Cement Retainer as Casing Bridge Plug

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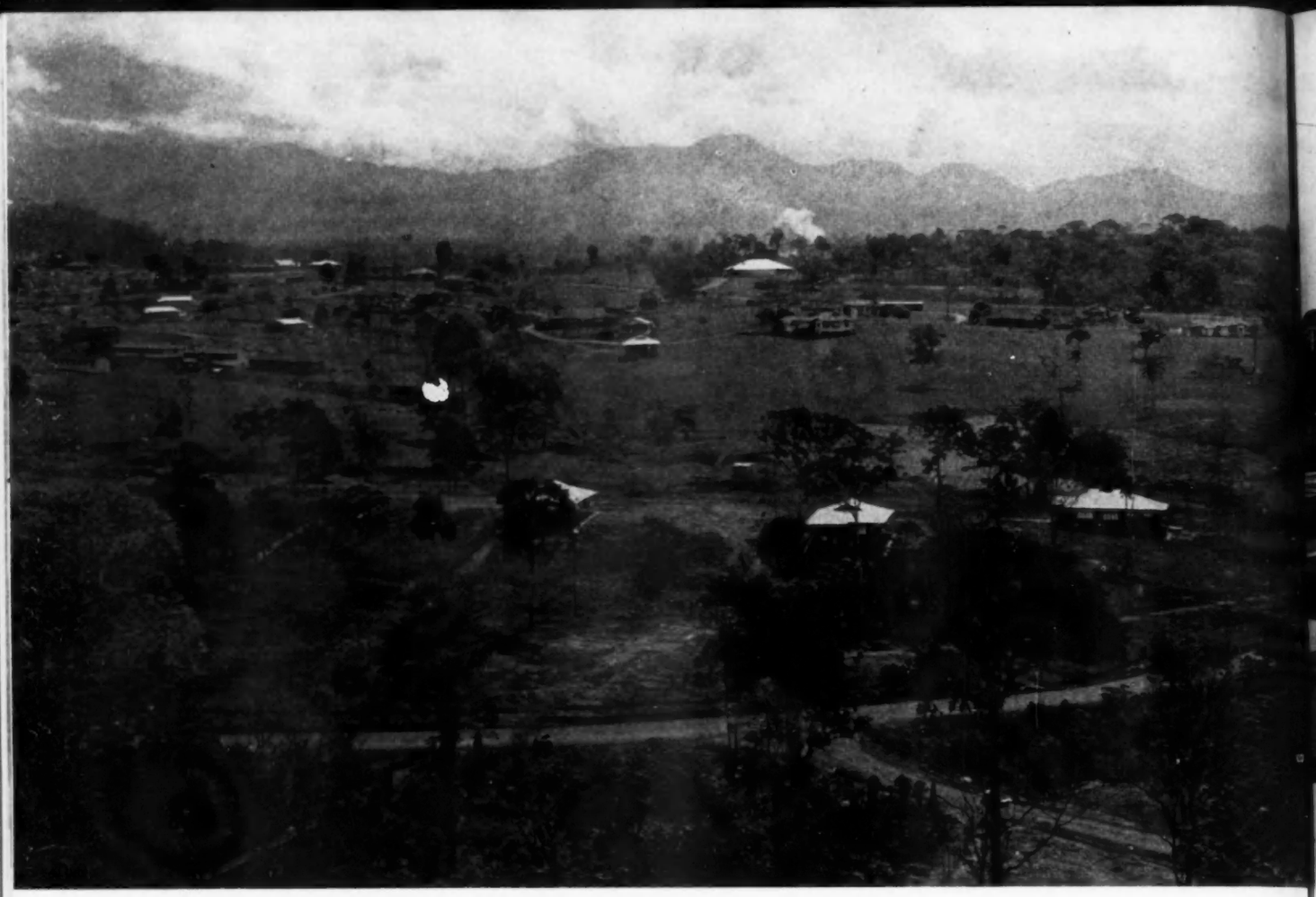
BAKER NEWS SERVICE

The Baker News Service is a quarterly bulletin service of successful operating ideas for the petroleum industry, including useful supplementary information. It is devoted to current, practical field applications covering the Baker Cement Retainer as well as other major tools making up the Baker line. Operators interested in keeping abreast of progress in cementing, well completion and well repair operations will find this data extremely useful.

The Baker News Service will be sent to any interested oil man upon request.



General view of Caripito camp, with mountains in background, the jungle surrounding it, and with the golf course winding its way through it. Note wide spacing of the houses.

hospital is entirely self-contained and fully equipped with operating theatre, laboratory, X-ray and diathermy rooms, and is managed by a competent staff of medical officers, graduate nurses, laboratory technician and pharmacist.

"Generally speaking our mode of living is not so very much different to that at home. The bungalow-type houses in which we live, erected as they are on piles and having large airy verandas, are well suited to the climate and remain reasonably cool throughout the day. The mean day temperature here is in the region of 95° F. The houses are adequately supplied with fresh water of good quality and all are installed with good lighting, natural gas and sewerage facilities. Ample electric power is available for those wishing to operate washing machines, vacuum cleaners and such domestic paraphernalia, all of which is obtainable from agents of the big United States supply houses in nearby Maracaibo. These houses, which are fully furnished with imported furniture and include kitchens equipped with refrigerators and cookers operating on natural gas,

Continued next page

Below, the Caripito club house. Here is a building with a spacious lounge which becomes a movie house on movie nights. The building is equipped with all the facilities of a modern American club.

Swimming pool at Caripito, a delightful and popular place.

are made available to the married staff at a nominal rental.

"As regards the commissary there is usually available at the local stores an ample supply of the better known standard brands of canned goods and in recent months frosted foods have made a welcomed appearance. The war has, of course, not been without its effect on food supplies and certain items previously imported from Europe are no longer available. Efforts have been made by local enterprise to compete with imported foods but while they have achieved some measure of success you will understand my inference when I add that they have still a long way to go.

"Our bachelor staff and transients are established in bunkhouses which are in effect self-contained single-room apartments usually constructed in blocks of eight with a common veranda extending the whole length. Excellent meals of as wide a variety as circumstances permit are obtained at the mess hall operated by the camp boss who also

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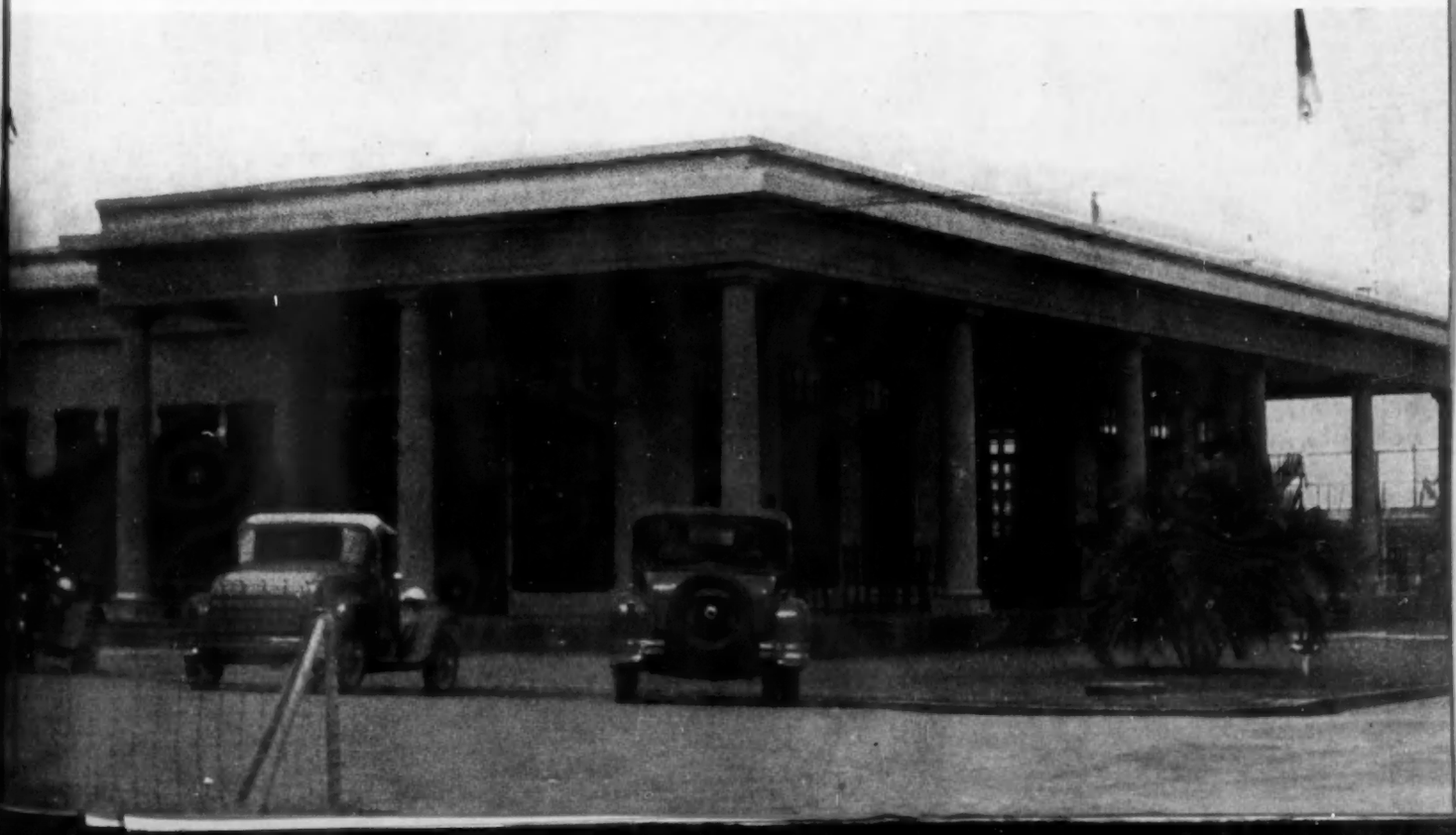
Caribbean Petroleum Company's foreign staff club in Maricaibo. Every camp has its club house, usually the center of social activity in the camp.



BJ TRIPLEX HOOKS · BJ WELDLESS LINKS · BJ TUBING CATCH
BJ HOOKS · BJ WELDLESS LINKS
BJ TONGS · BJ TRIPLEX
BJ ELLIOTT CORE DRILLS · BJ ELEVATORS
BJ KELLY BUSHINGS · BJ TONGS
BJ CASING SPIDERS
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BJ ELEVATORS · BJ TUBING HOOKS · BJ ROD HOOKS · BJ TONGS

BJ DRILLING and PRODUCTION TOOLS

1 to 4 All drill pipe and casing, from the largest and heaviest strings to the lightest ones, can be safely handled with BJ TRIPLEX HOOKS. The "Triplex" assembly consists of a large lower hook for carrying the swivel bail in a vertical, well balanced position, and two upper hooks, one for each elevator link. Because of this separation of bail and links there is no crowding, no off-center strains. The hooks all are closed, locked, and strengthened by "Locking Arms." The BJ 300 Triplex Hook is for 300-ton loads; the 150 for 150-ton loads; the 100 for 100-ton loads, and the 50 for 50-ton loads.

5 BJ WELDLESS LINKS are constructed with a "Perfection Bend" that brings the lift directly upward under the collar or coupling, thus eliminating undue leverage on the elevator trunnions (ears) and permitting easier handling of elevators. Maximum strength and toughness are obtained by forging and complete heat-treatment of the single piece of alloy steel. The handy Wire Line Handle is easy to grip and cannot be kinked or bent by rough usage.

6 BJ SURESTOP TUBING CATCHERS provide safety at all times — while running-in and coming-out of the well and while pumping. In the event of a dropped or parted string of tubing, extra-large slips set instantly against the casing and stop the fall without damaging casing, tubing or catcher. The BJ Anchor (optional equipment) eliminates vertical movement of the tubing while pumping and thus saves wear on tubing couplings and casing.

7 BJ ELLIOTT WIRE LINE CORE DRILLS contain exclusive features which permit good cores to be obtained without causing undue delay in the drilling program. Without removing the drilling string from the well one can drill straight, full-gauge holes — then core — then drill or core in any order and for any footage desired. A patented Venturi type valve greatly reduces the pressure inside of the core-taking barrel. The resultant suction is exerted upon the core as it enters the barrel so that accurate, uncontaminated cores are secured even from sand and other unconsolidated formations. BJ ELLIOTT WIRE LINE CORE DRILL BITS are furnished to penetrate all types of formations. The cutter action and wearing qualities of the cutter teeth, which are heavily faced with tungsten carbide, are unsurpassed by any type of coring bit now in use.

8 By having both front and rear operating latches, BJ ROD ELEVATORS permit fast, safe handling of rods, with minimum danger of kinking. These elevators are instantly reversible, with accurately machined rod seats on both sides, thus doubling the length of service. The latches must be opened by the operator before the rod can be released, hence accidental dropping is avoided. The solid, one-piece body is fully heat treated. BJ Rod Elevators are made in a Light Type for shallow wells, and a Heavy Type to carry the longest rod strings with a wide safety margin.

9 & 10 BJ ROD HOOKS assure maximum speed and safety in running or pulling rods. The exclusive "locking arm" quickly picks up the rod elevator bail and then closes and locks to provide a strong C-link that prevents the elevator bail from "jumping" the hook. View 9 shows the Type for 10-ton loads; a similar type handles 15-tons of rods; while the "20" (shown in view 10) has two enclosed relief springs for handling the longest rod strings without burring the threads.

11 BJ TUBING HOOKS are safe and easy to use. The BJ Locking Arm when open (as pictured) serves to pick up the elevator links, and then closes and locks to form a strong C-link, which prevents the links "jumping" the hook. Made in 3 sizes for 30-ton, 50-ton, and 75-ton loads.

12 Economical BJ SHORTYPE "C" TUBING CATCHERS provide complete tubing safety for wells of shallow to average depth. A BJ Anchor can be attached to stop "tubing breathing."

13 BJ EXTRA HEAVY ROTARY AND CASING TONGS are strong enough for breaking out drill collars, core barrels, and reamer subs, yet permit fast handling of drill pipe and casing. Properly placed handles and the loop-handle latch promote safe operation by keeping fingers out of danger. Long service and easy operation are assured by the lubricated hinge pins.

14 BJ SNAPONS are strong, quick-acting tubing tongs, which completely encircle the tubing and automatically lock in place. They ratchet perfectly, but will not come off the tubing until released by the operator. A handy "back-up" lever permits cross-threads to be taken care of without removing the tong from the tubing.

15 BJ SLIP CASING ELEVATORS safely handle the longest, heaviest strings of casing; are easily operated; and can be removed without difficulty while the cement is setting. The load is carried on four long slips, which set automatically below the collar or coupling, or can be set manually at any desired point with a lever. Thus no weight is carried by the coupling or collar.

16 BJ TYPE A CENTER LATCH ELEVATORS render the type of service operators require when handling heavy loads. Because of the complete heat treatment, the elevator stands up under the severest pounding of hardened tool joints contacted at high speed in handling collar type drill pipe. Long, guarded operating horns speed up handling with safety, and the protected latch cannot be knocked open accidentally.

17 BJ TYPE G CENTER LATCH ELEVATORS handle the longest strings of external upset drill pipe rapidly and safely without using lifting plugs. They support and lift the pipe by the external upset. The contour of the inner bore fits the standard 18 degree external upset. The two rugged halves are joined by a strong hinge pin in the rear, and a massive stirrup-type latch fits over lugs in the front so that no load is imposed on the latch pin.

18 BJ KELLY BUSHINGS absorb the shock and permit the kelly to feed smoothly and evenly through the rotary table. An oil-resistant synthetic rubber cushion fits into the corrugated inner bore of the body. Slips with corrugated metal-backs to fit against the cushion are equipped with replaceable anti-friction liners which contact the bearing surfaces of the Kelly. They absorb the driving torque and constantly smooth up and polish the kelly, thus minimizing the tendency for the Kelly Bushing to take any weight which might cause the kelly to feed erratically. Radial thrust is taken on metal bearing surfaces at the top and bottom of the body.

19 BJ CASING SPIDERS meet the exacting demands of operators who know the necessity for using a strong, safe spider which will be easy to operate and still grip instantly and positively. The alloy steel body is made in two halves, joined in the rear by a strong hinge pin, and with a massive stirrup-type latch to join the body at the front. The four extra long flat-back slips grip evenly, with a minimum of vertical travel, and are designed to avoid crushing or bottle-necking the pipe under all conceivable operating conditions. Rated capacity, 300 tons; separate slips are provided for casing from 5½" to 13⅜" A.P.I.

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ELLIOTT CORE DRILLS · BJ CASING SPIDERS · BJ KELLY BUSHINGS

At left is the staff club house of Venezuelan O Concessions at Lagunillas. There are three majo camps in this area and the club house of each is a most popular place.

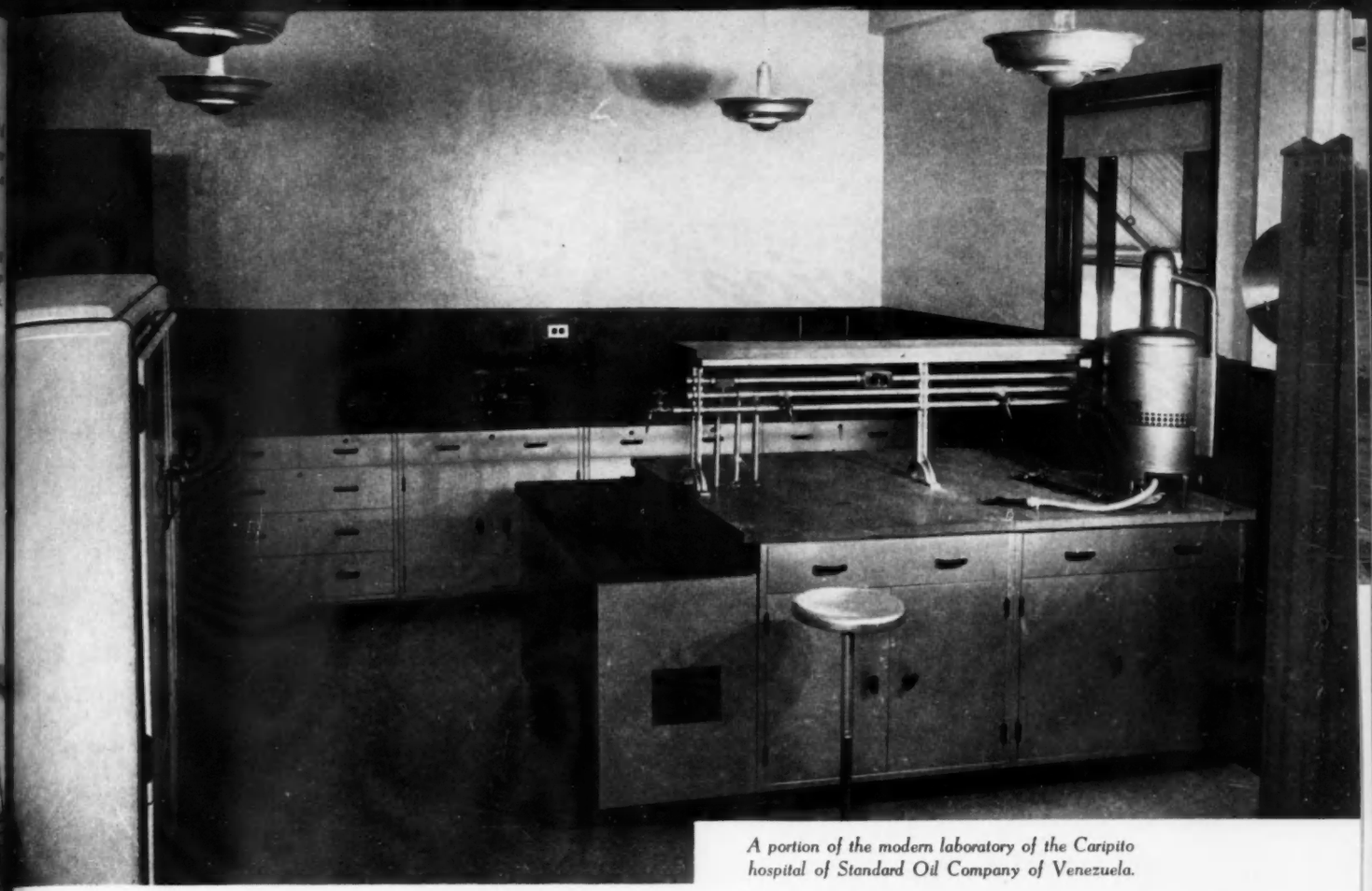
Below is swimming pool at Lagunillas. Swimming pools usually are operated in conjunction with camp club houses, although this is not the invariable rule.

has the staff housing under his care. Dealing as he must with varied nationalities with widely different tastes, and not forgetting some 50 families, the camp boss' job is no sinecure. However, we have the right man for the job and he manages to keep everybody reasonably happy.

"Excluding continuous operation jobs such as drilling, production, plants, etc., work in general around the field commences at 6:30 a.m. and continues until 4:00 p.m. with a midday break of 1½ hours. Only essential services are operated on Sundays. One rarely hears complaints from any of the staff regarding working conditions here. Not that there is any material justification for complaint. Of course one meets

Continued on next page

At bottom is Standard Oil Company of Venezuela's hospital at Caripito, a hospital which would do credit to a city of 50,000 people in the United States. Note the construction designed to catch the breezes yet keep out tropical glare.



A portion of the modern laboratory of the Caripito hospital of Standard Oil Company of Venezuela.

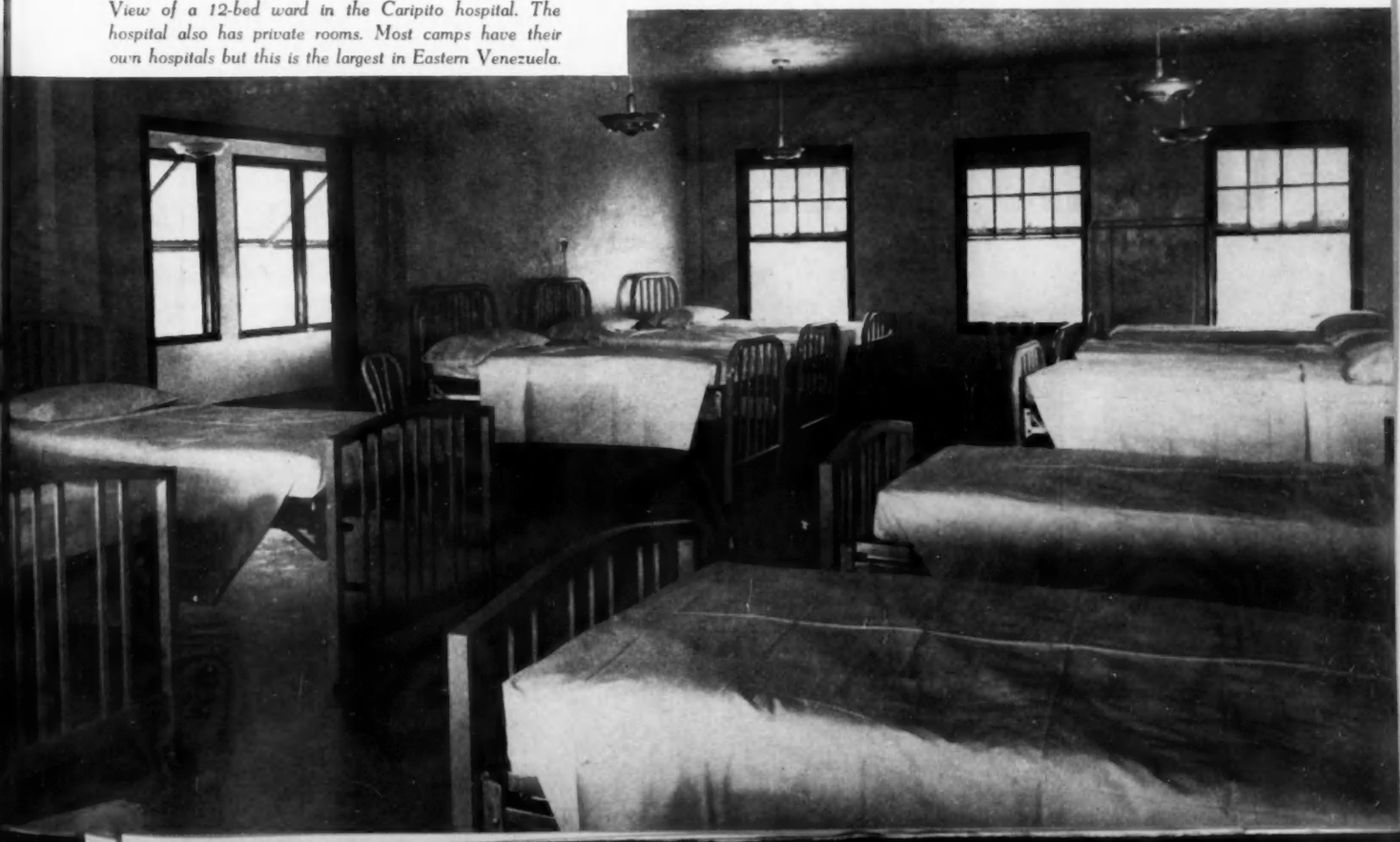
here, as elsewhere, just one or two who are never happy unless beefing about something or other. They carry on just the same. Beefing appears to be a part of their routine.

"Apart from administration, technicians, and some specialized foremen, practically the entire staff here is engaged locally and credit must be given to the Venezuelan for his ability to do a good job of work.

"There are ample facilities for recreation in and around the camp here. For swimmers there is the swimming pool, 80 x 36 feet, and equipped with a diving tower. A chlorinating plant insures cleanliness of the water. The two tennis courts are equipped with lighting to facilitate playing at night when the temperature falls. Provision is also made for football (soccer) and both this game and baseball have adherents. For golf fans there is the recently completed nine-hole

Continued on page 84

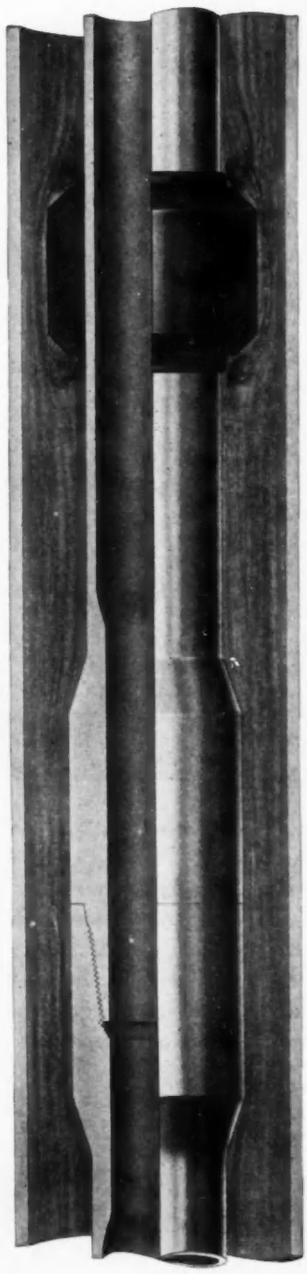
View of a 12-bed ward in the Caripito hospital. The hospital also has private rooms. Most camps have their own hospitals but this is the largest in Eastern Venezuela.



Lip service for drill pipe

Patterson-Ballagh now makes available an improved line of Drill Pipe and Casing Protectors. Tight-gripping annular lips are provided at both ends of the Protectors. By adding lips, "ringing" or grooving of drill pipe is eliminated. Swirling action of the mud takes place at the bottom of the lip on the rubber instead of in the corner of the pipe. These extended lips are molded as an integral part of the rubber. They give the Protectors more streamlining. The lips form a sealing ring which prevents mud from getting behind the Protectors. Extension of the lips at top and bottom adds approximately 15% more contact area and more grip.

Swirling action of mud does not concentrate on drill pipe. The lip of the Protector eliminates abrupt ell and the swirling occurs on the rubber which effectively resists abrasion.



PATTERSON-BALLAGH
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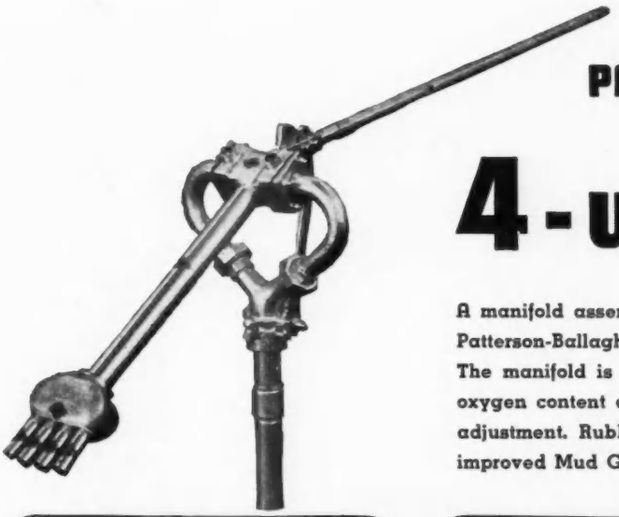


PATTERSON-BALLAGH'S MUD GUN WITH

4-way manifold

A manifold assembly consisting of four ½" outlet nozzles is now available with Patterson-Ballagh Super-Universal Mud Guns. It increases jetting effect four-fold. The manifold is a steel unit. The efficient discharge below the surface reduces oxygen content and smooths pump action. No side thrust. Balanced flow. Simple adjustment. Rubber nozzles can be provided. Ask for further details about this improved Mud Gun.

PIPE WIPER

Strips the pipe clean of mud as the pipe emerges from well. Eliminates necessity of hosing; prevents dilution of mud from hose water. Very durable. Promotes cleanliness of derrick floor.

Universal Sucker Rod Wiper

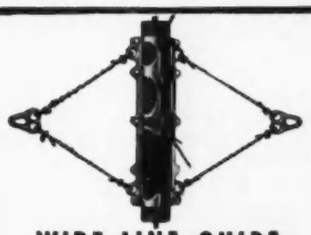
This improved sucker rod wiper, or "stripper," provides the crew with the most compact unit for effectively cleaning the rods and couplings of oil as they are brought up from the well.

TUBING PROTECTORS

A special plastic product, molded, reinforced and fabricated onto the tubing collar. Tough and resilient. Protects against vibration and abrasion.

SWIVEL BAIL BUMPER

The cushioned protection every swivel bail needs for preventing cutting and undue wear on swivel bail and elevator links. Short and double types. Furnished by swivel manufacturers or direct.



WIRE LINE GUIDE

Fills an urgent need for a stabilizer to prevent vibration of wire line, especially in tall derricks. Permits proper spooling. Equipped with durable rubber cylinder, replaceable.

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A one-piece, all-rubber line wiper for stripping sand line or fishing line. Quick to install. We also make a sucker rod wiper with replaceable rubber spool.

Every Patterson-Ballagh Product is tested in the field for months before being offered to the Industry. Long and intensive research in the production of rubber has led to improved performance. The rubber is specially compounded, and is, in our opinion, the toughest, most resistant product ever developed for the service.

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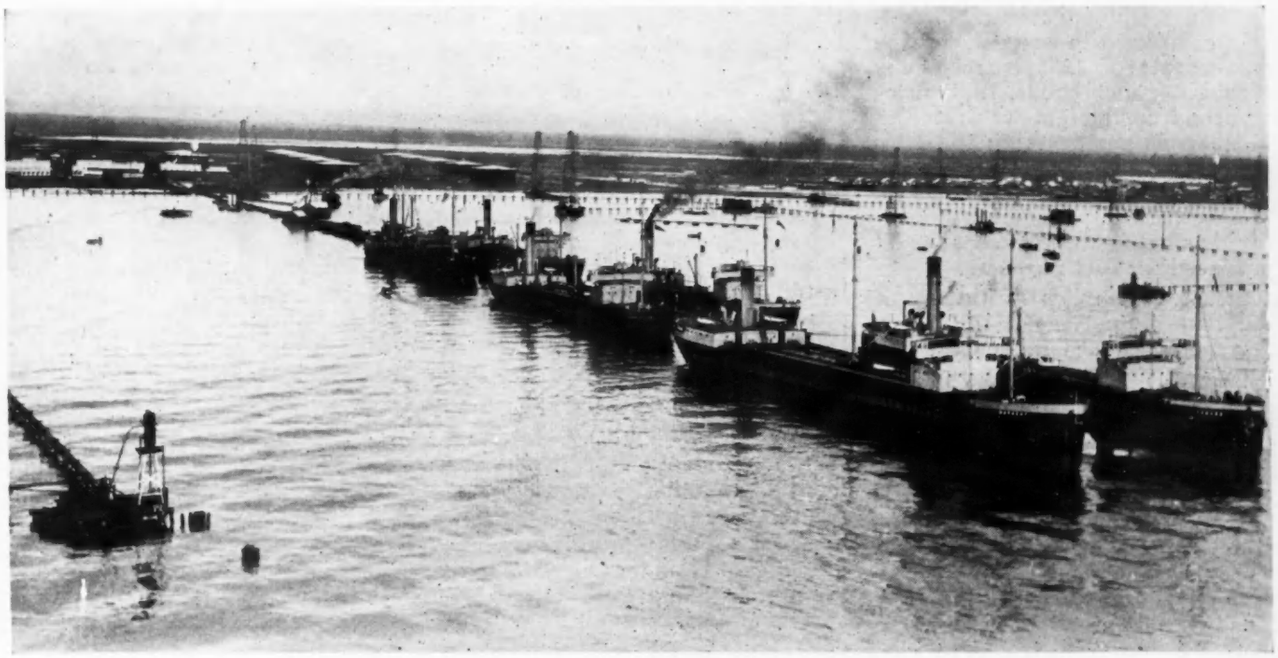
course of 2900 yards located some 12 kms. from the camp. Laid out as it is in a clearing with tall trees and dense undergrowth, mostly cactus, extending along the entire perimeter, there is every encouragement for the player to remain on the fairways. Once in the rough, well — it is just another ball. It is generally conceded that the Scot who laid this course out did a good job of work and it represents a vast improvement over the course of a few years back which boasted such hazards as the hospital, derricks, boiler stations and the various service lines common to oil fields. In these parts where darkness falls early there is just sufficient time in the late afternoon to negotiate the nine holes. I should mention here that there also exists the 'nineteenth hole' which is a quite useful adjunct. While on the subject of recreation I should not omit to mention the club house located more or less centrally in the camp. The club boasts modern movie equipment and two shows are given each week with an occasional special show for the children. The movies shown here make their appearance in this district at much the same time as they appear on general release in the United States. Other facilities in the club include pool and table tennis and there is, of course, the long bar where most known (and not a few unknown) refreshments may be obtained. Although rather less in evidence of late every once in a while a dance is held in the club and for this several local dance bands are available to choose from. These dances are invariably well attended by our own staff and the employees of other companies operating in the district.

"Some time ago I was asked whether any facilities existed in the camps for churchgoers. There is in Maracaibo, located in the staff colony, a small church the erection of which was financed by the community. The chaplain, at one time a member of the staff here, apart from holding the regular services in the church also visits the fields.

"I have not infrequently heard the question 'do you not find the life monotonous?' The answer is decidedly 'no.' Anyone with normal interests can find ample to occupy his time usefully. The first class roads completed recently have opened up the interior and those with cars can, if so inclined, reach the mountains (Andes) in a few hours. Similarly those wishing to go to Maracaibo can do so in about 2½ hours. Here in Lagunillas, as everywhere, the ladies must have their shopping forays and to facilitate this special transportation to Maracaibo is provided them each week. Staff are given three weeks' vacation each year and even with the present curtailed steamship services it is possible to visit for a few days either the Netherlands or British West Indies, or any of the neighboring Central American republics. Maracaibo is well served by airlines offering daily services with connections to almost anywhere. If one is in a hurry the journey as far as New York can be made within 24 hours.

"Much as most of us like being here we all look forward to the end of three years contractual period bringing with it, as it does, three full months vacation at home. The few weeks preceding this long vacation sees all sorts of plans for the holiday being formulated even though one knows full well that most of them will be forgotten the moment you arrive home. To my mind vacation time is just the time to forget such things as plans, schedules, etc., exist."



Lago Petroleum Corporation's tanker berth at Lagunillas

New Eastern Fields Improve Venezuela Possibilities

By J. V. HIGHTOWER, Foreign Editor

VENEZUELA produced 186,134,390 barrels of crude oil in 1940 as against an all-time peak of 205,432,652 barrels in 1939. This comparison of figures, however, is deceptive. The war hurt Venezuela's markets, and had it not been for war, Venezuela probably would have had a record output in 1940. Events of the year and of this spring indicate that the country's greatest years still lie before her.

Eastern Venezuela held the spotlight. Several new fields were discovered, and areas previously indicated as productive became actual shipping fields. Oil from the eastern region flowed in increasing volume through the 100-mile, 16-inch pipe line built by Mene Grande Oil Company from the Oficina field to Puerta la Cruz. The company was carrying toward completion a modern paved highway along this line. Venezuela's refining capacity reached 70,000 barrels of crude daily as Standard Oil Company of Venezuela's 35,000-barrel-per-day refinery at Caripito, opened late in 1939, went into regular operation.

Eastern Venezuela production last year totaled 48,700,000 barrels, compared to 35,060,000 barrels in 1939. Production of this region was 26 percent of the total for the country, as against only 17 percent in 1939. The gain was partly due to completion of the Mene Grande pipe line. New fields opened in the east were another reason for the gain. A third cause was a material reduction in output of the Lake Maracaibo fields following the outbreak of war, when a slack in demand for heavy crudes developed. There was appreciable drilling in the established fields, however. Mene Grande Oil Company drilled 18 wells in Bachaquero field, all were producers. Shell interests drilled about 100 wells. Standard Oil Company of Venezuela did no drilling in the Lake parcels.

Although the expected war-time increase in demand for Venezuelan oil failed to materialize in 1940, the fact did not prevent progress in the industry. Particularly notable was development around the San Joaquin region. The El Roble field was expanded and put into regular production. This field, whose sands are of the lower Oficina formation of Oligocene age, is 8 miles north of the San Joaquin field and is being operated by Standard Oil Company of Venezuela under agreement with Pantepec Oil Company, half owner of the concession. The discovery well, Roble 1, was completed in 1939, but it was in 1940 that the field reached the "shipping" status. El Roble production is deep. Roble 2, completed mid-year of 1940, produced from 8312-8348 and 9349-9520 feet. Roble 3, completed this spring, produced from 9450-9530, 9627-9650 and 9790-9815 feet. A fourth producer was being tested in April. The oil is of high gravity, averaging around 43 degrees. Total production of the first 3 wells is about 4700 barrels daily.

Socony-Vacuum Oil Company opened its Guario field last year on a dome a few miles northeast of

the San Joaquin anticline. Guario 1 was completed in August, flowing at the rate of 1250 barrels daily through ⅜-inch choke. In January a second completion was rated at 976 barrels per day through a ¼-inch choke. In March, Guario 3 and 4 were drilling below 7100 and 4300 feet respectively. Guario production has been shut in except for oil produced for fuel purposes.

Situated 10 miles southwest of the San Joaquin field, the Santa Ana field of Mene Grande Oil Company shipped for the first time last year, although the discovery well was completed in 1939. Santa Ana 2, completed in May, 1940, had an initial production of 530 barrels daily from the 7030-7040-foot level. Last month Santa Ana 3 tested 1722 barrels of 33.8-gravity oil through ½-inch choke. Oil is taken through a 4-inch lateral into the Mene Grande pipe line. Two miles east of Santa Ana 1, and on the same structure, The Texas Company of Venezuela's Rincon Largo 1 last month flowed at the rate of 385 barrels daily of 35.6-gravity oil on 3/16-inch choke, through perforations at 8775-8790 feet. Bottom of the hole is below 9631 feet.

Outside the San Joaquin area, Mene Grande Oil Company developed the Leona field when Leona 1 was completed late in 1940 for 1500 barrels daily of 28-gravity oil. Last February the second well was completed for 2000 barrels of 26-27-gravity oil, production being obtained at 6486-6504, 6312-6321 and 6293-6305 foot intervals. Leona 3 was completed in March for an initial of 575 barrels at the 6321-6332-foot level. The fourth well was drilling below 5400 feet last month. Production of the Leona field is closed in.

Eastern Venezuela Map

An elaborate map of Eastern Venezuela with all concessions shown in color, originally scheduled for this issue, was delayed in the mails and did not reach Houston in time to be processed for the International Survey Number. However, it is being prepared for publication and will be presented as a special insert in an early issue of THE OIL WEEKLY.

Discovery of new fields continued into this spring. In January Mene Grande Oil Company brought in Santa Rosa 2 for 1500 barrels of 42-gravity oil from 6535-6550 feet. The well is 11 miles east-northeast of the Roble field. Santa Rosa 1 had been abandoned in 1936. A third well, 1200 meters east of No. 2, was drilling below 4530 feet late in April. In February, 1941, Venezuelan Petroleum Company established a new field on the Meyer C concession, an area of 24,000 acres in the state of Monagas. The discovery well, Santa Barbara 1, a 4000-barrel-per-day producer of 26-28-gravity oil, is 10 miles west of the Jusepin field and situated on the south flank of an anticline. The well is reported to have 163 feet of sand, 99 feet being unbroken oil sand. Step-out wells in the region are planned.

Numerous wildcats were drilled last year in addition to those which established the new fields previously described. Socony-Vacuum Oil Company's Anaco 1, 4 miles northeast of the El Roble field, was drilling below 9470 feet in shale last month. The company abandoned Panchita 1, 43 miles southwest of the Oficina field, after drilling to 3606 feet. The rig was moved to drill another wildcat, Hamaca 1, located 11 miles northeast of Atapirire in southern Ancoategui.

The Texas Company of Venezuela drilled a failure in Caritos 2, located northeast of the Temblador field and in the district of Sotillo, Monagas. The well was abandoned after drill-stem tests showed salt water at several intervals around 6000 feet. A third well was also a failure. Although Caritos 1 was good for 400 barrels daily of 30-gravity oil, operations in the area were temporarily suspended.

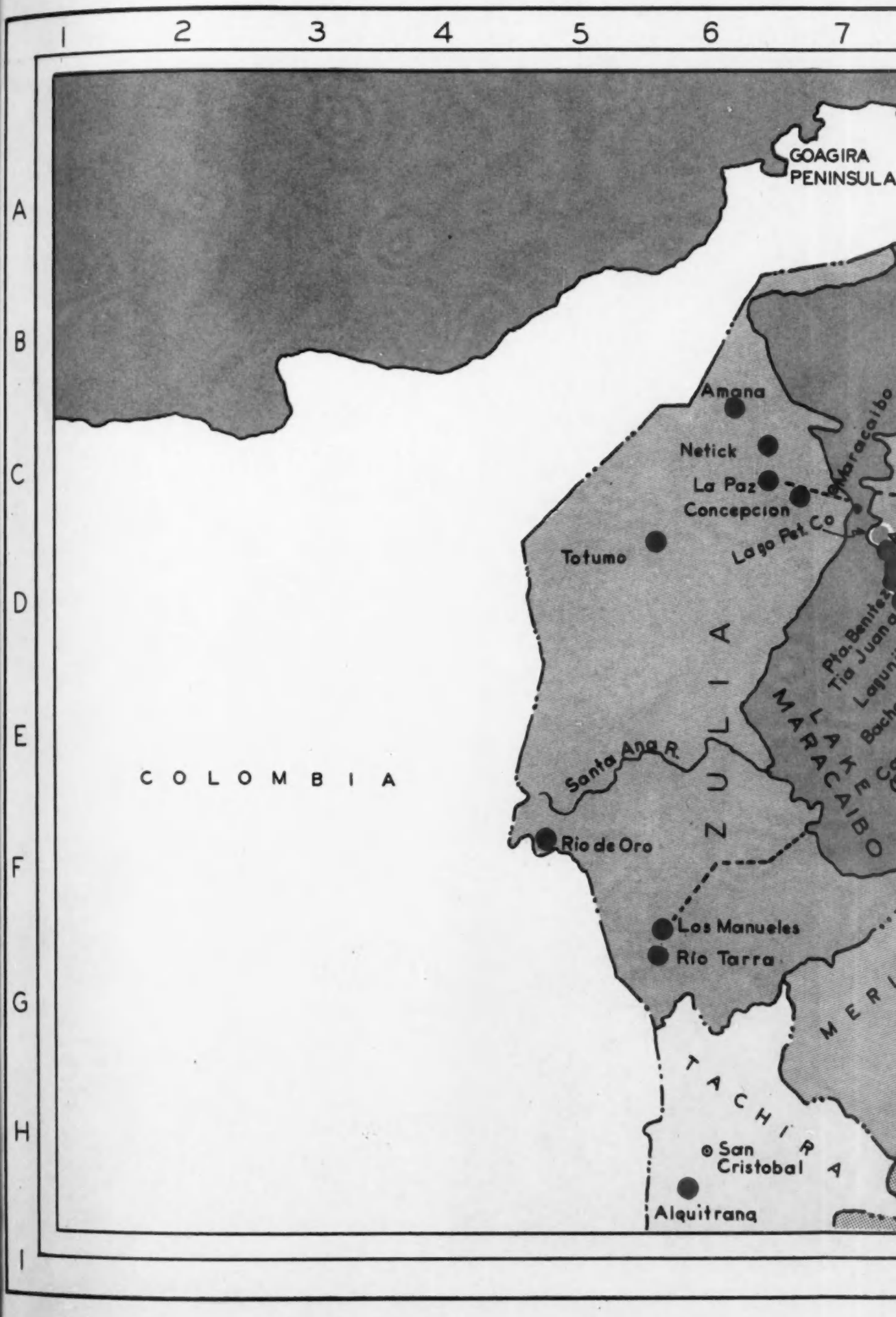
Mene Grande Oil Company's wildcat O.S. 13, drilled last year inside the company's terminal grounds at the San Tome camp, came in this spring for 400 barrels, producing from 5300 feet after being plugged back from below 7000 feet. The company located Quiamare 1 ten miles east of the Mene Grande pipe line and 32 miles north of El Roble field. Last month this test was drilling below 3000 feet.

S.A. Petrolera Las Mercedes was drilling Mercedes 1 in central Guarico. In April the well was drilling below 5740 feet in thin lime sands and shale.

Standard Oil Company of Venezuela obtained small production in

Venezuela Production and Well Data by Fields

	1940			1939		WELL DATA AS OF DECEMBER 31, 1940								
	Total Production	Daily Average	Cumulative Through 1940	Total Production	Daily Average	Wells Drilling	Natural Flow	Gas/Air Lift	Pumping	Closed In	Inactive	Abandoned	Total Wells Drilled	Wells Completed In 1940
North Fields	19,324,559	52,779	384,130,887	24,687,184	67,636	1	82	22	569	240	277	121	1,311	49
Tia Juana	36,946,186	100,946	155,247,495	48,758,913	133,586	....	92	28	232	162	15	2	531	28
Lagunillas	58,464,785	159,740	947,139,080	70,600,109	193,425	5	122	....	654	443	130	76	1,425	101
Bachaquero	1,682,959	4,598	6,055,923	3,382,620	9,267	....	14	....	....	28	35	....	77	38
La Paz and Concepcion	1,288,199	3,520	27,455,145	1,401,254	3,839	....	2	....	44	75	14	6	141	4
Tarra and Manueles	6,196,869	16,931	62,321,490	5,642,466	15,459	3	22	....	54	12	26	15	129	7
Mene Grande	10,812,402	29,542	220,363,025	12,235,405	33,522	3	44	10	121	111	123	23	432	25
El Mene and Media	321,803	879	24,602,654	430,944	1,181	....	....	39	37	....	41	207	324	.....
Cumarebo	1,630,785	4,456	26,153,197	2,667,326	7,308	....	22	....	14	46	22	14	118	1
Quiriquire	21,676,451	59,225	172,255,873	26,581,631	72,826	....	118	....	23	89	51	15	296	.....
Pedernales	1,795,888	4,907	7,178,142	1,904,963	5,219	....	10	....	....	3	2	4	19	.....
Temblador	3,994,215	10,913	10,000,875	3,647,867	9,994	....	57	....	....	13	5	15	90	1
Oficina	15,414,106	42,115	17,956,725	2,347,642	6,432	11	107	1	1	14	8	13	144	105
Jusepin	3,995,154	10,916	4,511,270	512,296	1,404	1	22	....	....	33	1	1	57	36
San Joaquin	1,097,562	2,999	1,139,285	41,723	114	3	10	....	....	....	....	....	10	6
El Roble	654,379	1,788	656,204	.....	.....	2	2	....	....	....	....	....	2	1
Santa Ana	75,790	207	111,208	24,395	67	1	1	....	....	1	....	....	2	1
Tigre	17,551	48	17,782	.....	.....	....	....	....	....	2	....	....	2	2
Hombre Pintado	658,093	1,798	1,515,564	489,813	1,342	1	19	....	3	....	8	7	37	10
Las Palmas	42,461	116	348,619	59,658	163	....	....	....	3	1	5	4	13	.....
Others	44,193	120	3,499,785	16,443	45	11	1	....	....	40	10	349	400	14
Total	186,134,390	508,563	2,072,660,228	205,432,652	562,829	42	747	100	1,755	1,313	773	872	5,560	429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Laguni
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MARACAIBO
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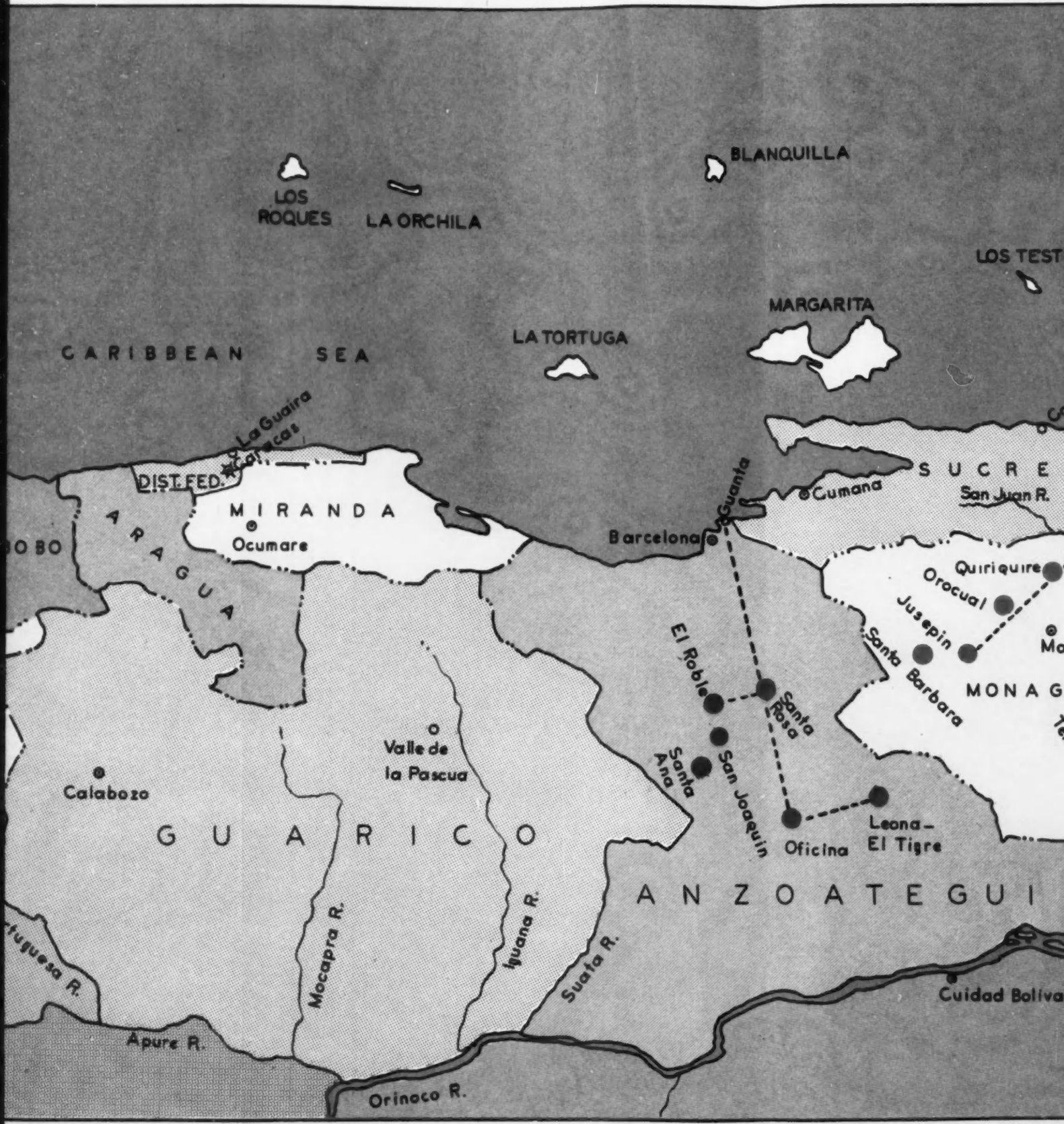

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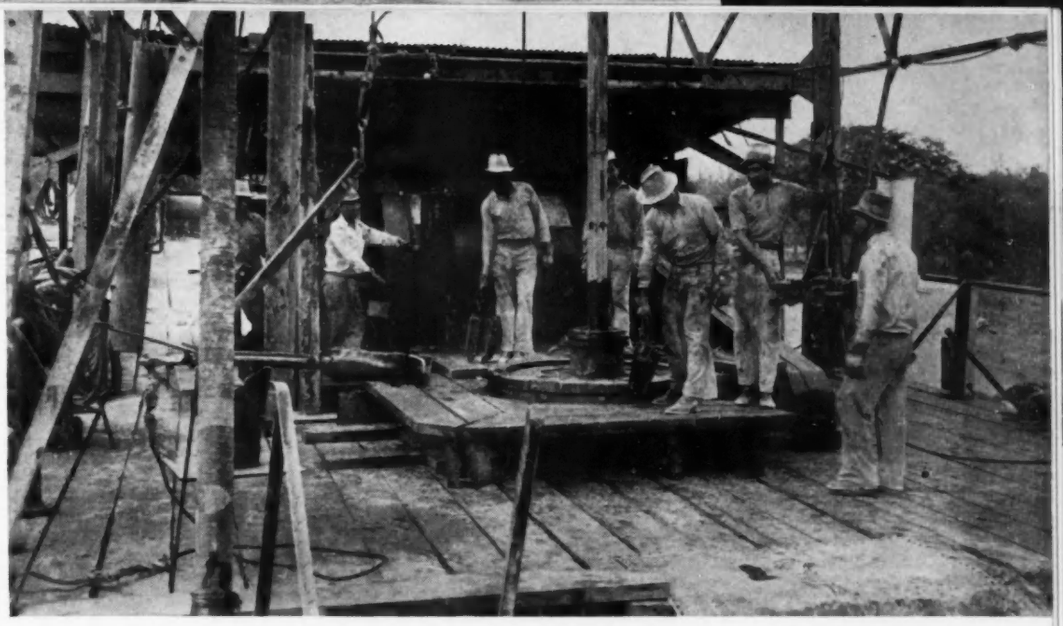


Venezuelan crew working on a deep well.

Socororo 1, a test 22 miles west of Oficina, but the second and third tests were dry. The company has said no further development is planned in the vicinity. Another Standard Oil Company of Venezuela wildcat, Ollas 1, in eastern Guarico 40 miles southwest of El Roble field, was drilling below 6880 feet last December. Gorrin 1, in Guarico and 160 miles west of Socororo, was abandoned as a dry hole.

Pipe-line construction, refinery expansion and subsidiary developments accompanied the increase in Venezuelan production. Finished late in 1939, Mene Grande Oil Company's pipe line from the Oficina field to Puerta la Cruz was an important phase in developments in eastern Venezuela. It provided the necessary outlet for Oficina and other fields in the territory. A 12-mile, 8-inch lateral was constructed last year to the San Joaquin field. Also completed was the 8-mile, 4-inch lateral to handle El Roble's production. Other small feeders were constructed from the Santa Ana and Santa Rosa fields.

The Jusepin field had been in regular production since late in 1939, when an 8-inch, 40-mile line was completed to the refinery at Caripito. The Santa Barbara discovery early this year opened the prospect of a second long pipe line in eastern Venezuela. Venezuelan Petroleum Company has a terminal site in the Puerta la Cruz region which may become the terminus for a line from the Santa Barbara field.

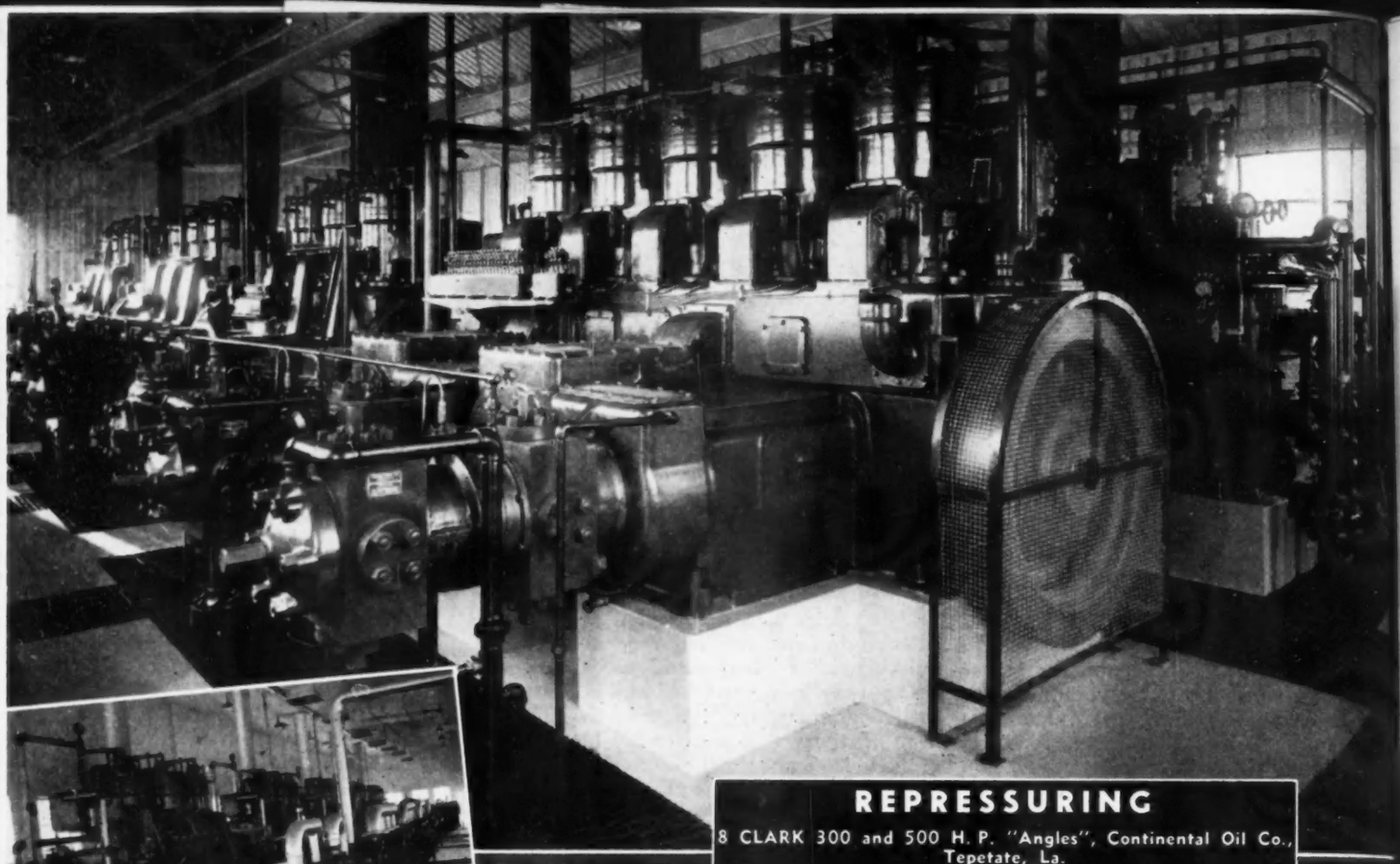
Part of Mene Grande Oil Company's pipe-line program was the $4,000,000 highway, the best in eastern Venezuela, which was nearing completion last year. Paralleling the pipe line from Oficina to Puerta la Cruz, the highway is provided with concrete bridges. Topping the highway with asphalt is still under way, 17 kilometers at the northern end of the road being finished. Some test sections are being paved at different points, experience having indicated that the heavy duty to which the highway will be subjected will require various types of treatment. The road, which is open to the public, is the only one giving access from the Puerta la Cruz section of the Caribbean coast to the Orinoco River valley.

During 1940 Venezuelan refineries processed 23,500,000 barrels of crude oil, nearly double the amount handled in 1939. Expansion of facilities in the plants of Caribbean Petroleum Company at San Lorenzo, Lago Petroleum Company at La Salina and Standard Oil Company of Venezuela at Caripito materially improved the country's refining capacity, which was over 70,000 barrels of crude daily last year. The plant at Caripito, opened officially late in 1939, is the newest and largest in Venezuela. It was in regular operation last year after loading a tanker with the first consignment of products in November, 1939. Running at an average daily crude rate of 35,200 barrels, the refinery has been making gasoline, naphtha, gas oils, heavy fuel oil and asphalt. Domestic and export markets are supplied.

Last year no material change occurred in the system of laws controlling the oil industry. Earlier conflicts still exist to some extent. Despite former supreme-court decisions to the effect that imported equipment designed for use in oil operations on concessions granted prior to 1936 should enter the country duty-free, the ministry of fomento has sought to collect duties on a large amount of the same class of materials involved in the court decisions. No further court decisions on this subject occurred last year.

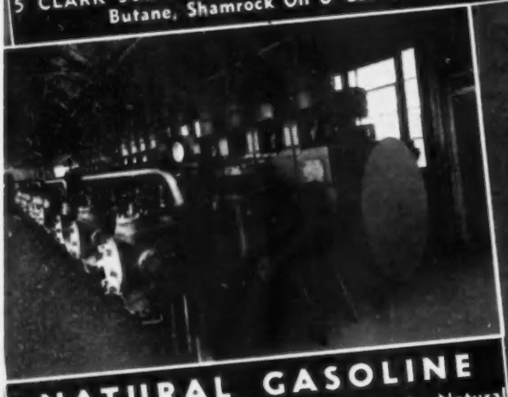
Acquisition of new concessions from the government under the petroleum law of 1938 did not occur and it is understood that none were applied for. However, Standard Oil Company of Venezuela acquired 2583 acres from the government as the result of negotiations in August, 1936. The same company is listed in Creole Petroleum Corporation's annual report as having obtained in addition 99,850 acres, the nature and locality of which have not been disclosed.

An appreciable volume of new building construction related to the oil industry was under way. Work was delayed on the $1,300,000 hotel at Caracas which will benefit oil-company employes but the work is progressing this spring. Foundations have been laid and erection of the superstructure begun. Built of reinforced concrete, the hotel will have 100 rooms and will be three stories high. The site is a plot of 18 acres just outside the city. Financed by oil companies and private Venezuelan capital, the hotel is under management of Compania Anonima Hotelera Venezolana. Last month Mene Grande Oil Company completed a $150,000 office building at its San Tome camp, the structure being of steel and stucco and built with a two-story central section and four one-story wings. Also at San Tome camp is a new quarter-million dollar hospital, with completion expected in June. Early last March Mene Grande Oil Company completed a smaller $40,000 hospital at Puerta la Cruz.



REPRESSURING
8 CLARK 300 and 500 H. P. "Angles", Continental Oil Co., Tepetate, La.

BUTANE PLANT
5 CLARK 300 H. P. "Angles" used for producing Butane, Shamrock Oil & Gas Co.



NATURAL GASOLINE
4 CLARK 4-Cyl., 400 H. P. "Angles" in Natural Gasoline Plant, Panhandle region, Texas.

NATURAL GASOLINE
2 CLARK 300 H. P. "Angles," Eason Natural Gasoline Plant, Crescent, Okla.

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CL

Venezuela Loading Terminal Clean and Efficient

By CLARK ELDER
Pipe Line Superintendent, Mene Grande Oil Company

AT PUERTO LA CRUZ, deep-sea terminus of Mene Grande Oil Company's 16-inch pipe line serving the Eastern Venezuela oil fields, has been erected a modern petroleum terminal, consisting of storage tanks, a transfer station, loading tanks, and docks for loading outgoing ocean tankers. In addition, docks and bonded warehouses for receiving materials have been constructed.

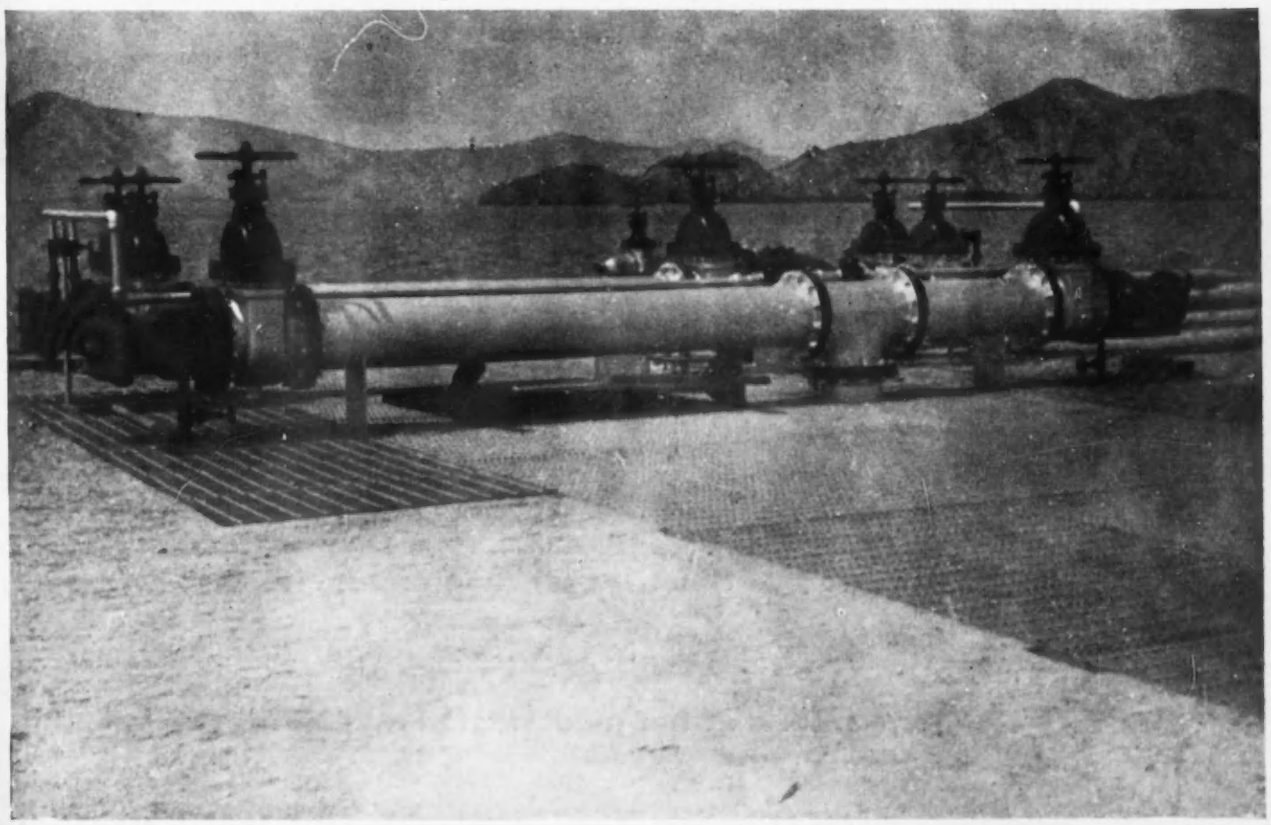
Previous to Mene Grande Oil Company's development of this area, Puerto La Cruz was a quiet fishing village, hidden from the outside by a series of barren islands. These islands afford the town complete protection. Thus it is one of the most practical harbors on the north coast of Venezuela. Every precaution against contamination of the beaches and waters has been taken at the Puerto La Cruz oil terminal.

Ten all-welded tanks with a capacity of 96,765 barrels each have been provided to take care of storage requirements from the 16-inch pipe line. Four 139,300-barrel loading tanks, of the floating-roof type, all welded construction, are located in the natural valleys of the hills, so that firewalls have been provided by damming up these valleys. Due to their elevation above sea level, a static head of 85 to 135 feet is provided in the ship-loading lines. The two loading lines from these tanks to the tanker dock are a combination of 20-inch and 24-inch pipe, having a maximum capacity of 22,000 barrels per hour each.

There also has been installed a diesel-electric transfer station of 7500-barrels-per-hour capacity for transferring the oil from the storage tanks to the loading tanks through two 16-inch lines.

A concrete tanker dock, 1328 feet long, has been constructed adjacent to shore and parallel thereto. This dock is the inverted deck type; that is, the concrete cross-section resembles a large trough turned upside down and filled with sand and coral, with walled-off pits at the loading connections. The fill on top of the dock provides stability and a clean and safe place for working. Any oil spilled is readily cleaned up and not allowed to flow into the sea. This dock can handle two ships at once, with a draft up to 36 feet.

The main loading-line piping has been laid on-shore, behind the dock. The lateral loading lines



Loading connections, showing drip pits provided under them to prevent pollution

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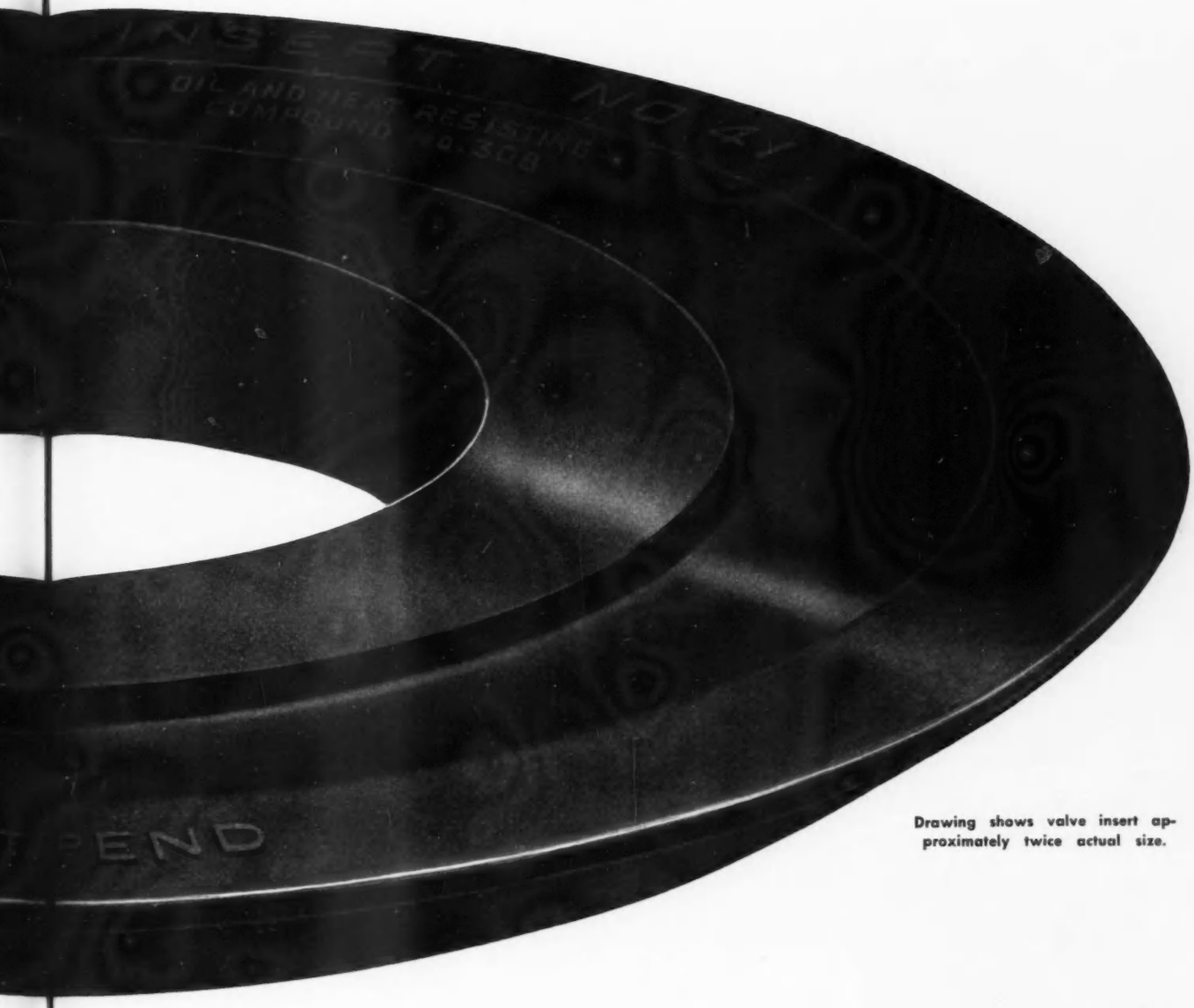
These *Universal* inserts (Compound 308) wear three to five times longer than regular inserts in ordinary mud and up to ten times longer than oil-resisting inserts in hot mud, treated mud or oil and gas.

One *Universal* service type insert is used for all types of mud.



Drawing shows valve insert approximately twice actual size.

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Two years of research and field tests under all conditions have proved beyond doubt that these inserts greatly reduce valve maintenance costs.

This compound is not a substitute due to priorities but a development started two years before priorities and proved to be from 5 to 10 times more durable than regular oil resisting compounds.

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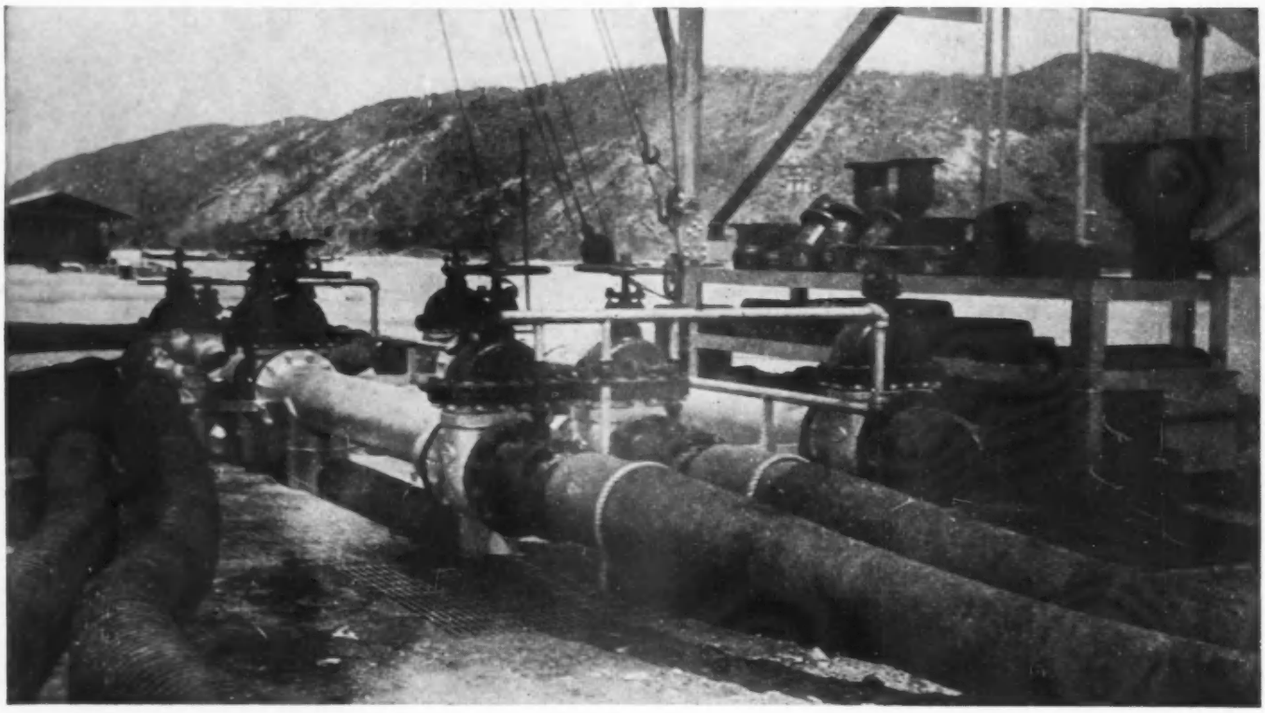
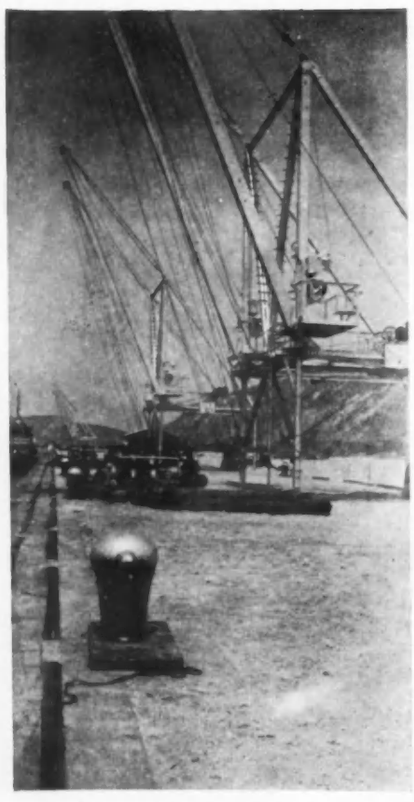


Loading hose and connections

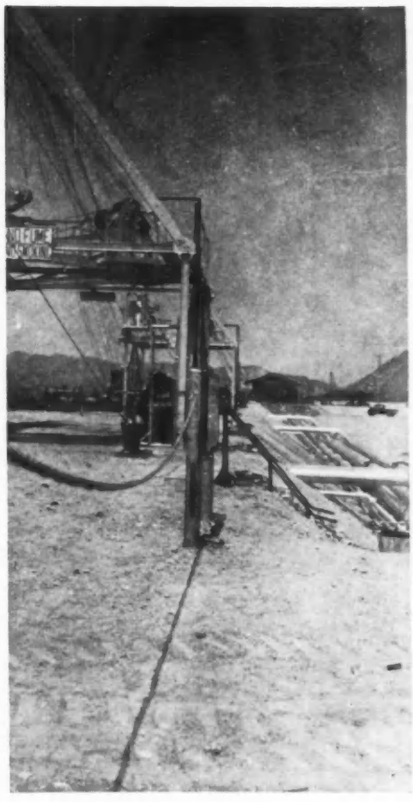
run into the loading pits below the dock level and these are covered with steel bridge decking. The pits are provided with drain lines and catch basins, so that any oil spilled from the hose or connections is trapped in the pits and collected and returned to the sumps.

Extreme care has been taken in the design of the dock and pits to insure against oil spilling into the sea from these operations. In this connection, a very elaborate ballast system has been constructed to recover ballast from the ships. This consists of a 40,000-barrel tank constructed in-shore with 12-inch cast iron lines from the dock. The ballast is pumped into this tank and allowed to separate. It is then drawn off through a swing line and trapped through concrete pits with baffles, so that all oil is separated from the water. The oil is reclaimed and the water is dissipated in a sump pit.

A concrete dock, 40 feet by 440 feet, has been constructed to take care of the handling of materials and equipment. This dock is of the pier type, located adjacent to shore, with two steel warehouse buildings, 50 feet by 200 feet, adjoining the dock at the same elevation so that dock tractors and dollies can handle material from ship side directly into the building. The warehouses are constructed at sufficient height above the general terrain so the floor height is level with the truck beds, thus facilitating the loading out of trucks. A depth of water along the face of the dock, from 28 feet to 30 feet, permits the handling of large size freighters. At one end of this dock a 50-ton completely revolving diesel-electric crane, constructed on concrete piling, handles heavy lifts from ship to dock or to trucks.



Towers for handling hose



Shore side of the dock

Sweden Developing Shale Oil Properties

A CRITICAL shortage of oil in Sweden, due to the country being cut off from its normal petroleum supplies because of the war, has caused increased attention to be paid to the possibilities of developing large-scale shale production.

Sweden has extensive deposits of alum shale in its central part, and a shale plant has been in operation in the region of Mount Kinnekulle on the southeast shore of Lake Vanern for many years. This plant has been expanded during the past 18 months, and a new project has been started north of Kinnekulle at the town of Yxhult, which is south of Obrebro between Lake Vanern and Lake Hjalmaren in Narke province.

Sweden's shortage of petroleum came at a time when the country was experiencing a rapid increase in consumption. Imports of petroleum products had increased 42.7 percent in the four years between 1935-1938. A large portion of its imports of 1,319,187 metric tons in 1938 was gasoline (650,000 metric tons being motor fuel). To a large extent this was due to the trebling of motor vehicle imports, which amounted to 25,626 units in 1938. The bulk of this import originated in the United States.

It was found necessary to ration petroleum products early in the war. Thousands of motor vehicles became useless, and the country's mechanical industry was swamped with orders for the necessary equipment to convert automobiles into generator-gas units.

A privately-owned shale pilot plant erected in 1925 at Mount Kinnekulle proved successful. This was taken over by the Swedish navy in 1932. In the autumn of 1939, following the start of the war, the Swedish riksdag (parliament) granted an allocation of 5,500,000 kronor (about $1,325,000) to expand this plant. The new construction was started in April, 1940, and 14 of the 28 retort ovens were expected to be in operation by January, 1941.

Apart from the oil plants themselves, the old Kinnekulle works embraced 10 so-called field ovens and a gas-heated shaft oven for by-product lime production. Gases emanating from the shale in the heating retorts are taken to a cooling plant where their condensable fractions are condensed into oil. The non-condensable balance of the gas goes on to a plant which extracts sulphur of high quality, and from this plant the ultimate fraction of gas is taken to the steam boilers. The steam produced is used to operate a turbine for generating electric power required for operation of the oil works and for sale to other consumers.

Mining of Shale

In previous times the oil shale was dug by hand-operated tools, but it is now obtained by mechanical excavation operating in areas previously broken up with dynamite. The shale is then transported by conveyors to the plant. The work is being carried on without interruption night and day in three shifts.

Water required for the oil works is pumped from Lake Vanern through a 4-mile pipe line.

The deposits around and on Mount Kinnekulle are estimated to represent about 16,000,000 metric tons, conservatively calculated to yield about 450,000 metric tons of oil, or in excess of 3,000,000 barrels. Out of about 100 tons of crude oil, about 9 tons of light motor fuel, 20 tons of heavy motor oil and 21 tons of fuel oil are obtained. The lightest of these fractions is fit for use in motor vehicles without further processing.

The distillation gases of the shale contain additional quantities of gasoline. By intensive cooling these gases can be transformed into gasoline, the ratio being about 30 percent of the distilled shale. Tests are stated to have shown that the crude shale oil yield by application of cracking or hydrogenation can be made to yield aviation gasoline, high-quality gasoline, and diesel oils.

Cost Over Four Times Oil

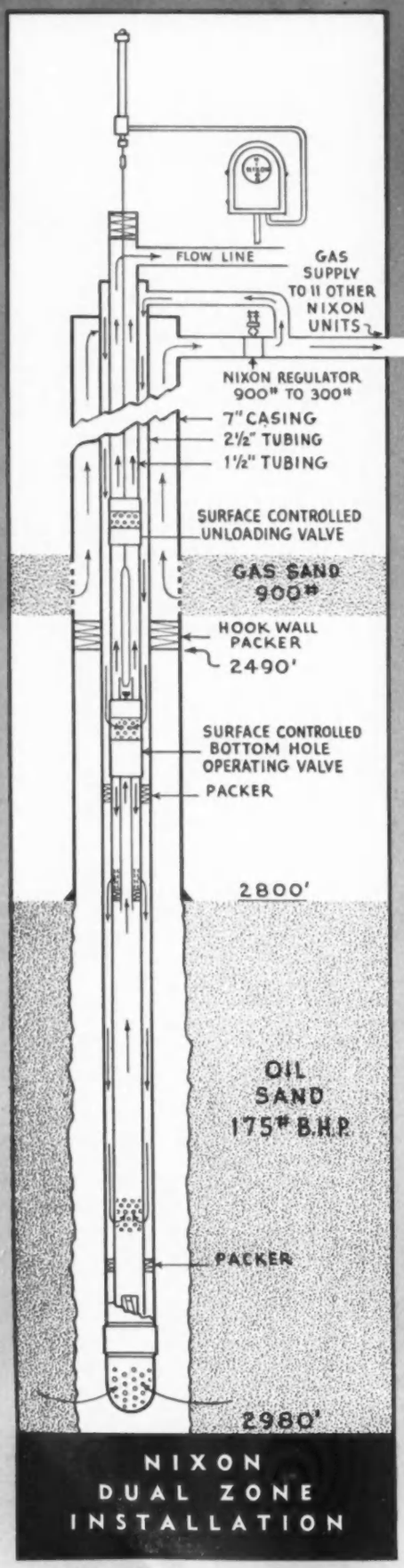
When the complete works at Kinnekulle are in full operation, the quantity of oil obtained is expected to be about 10,000 metric tons a year.

A far more comprehensive scheme is being carried out at Yxhult in Narke province. Here the shale deposits are said to be capable of yielding about 25 million tons of crude oil, the contents being 12 to 13 percent refined gasoline, 20 percent motor oil and 25 percent fuel oil. A pilot oven being erected at Yxhult is expected to procure an output of 670,000 gallons of gasoline annually, apart from other products. This giant oven will be of the type used in the Estonian shale oil workings, and differs considerably from the small oven used at Kinnekulle.

A new concern has been organized to exploit the deposits in Narke province. It is Swedish Oil Shale Limited. The Swedish Fuel Commission has calculated that the production cost of a ton of crude oil at Narke will amount to 190 kronor (about $45.80) as compared with 42 kronor (about $10.12) per ton for imported crude oil just prior to the start of the war. This difference in price should not prove detrimental to the creation of an extensive shale oil industry in the country, under present difficult conditions.

The first stage of construction at Narke is being erected to yield from 13,000 to 15,000 metric tons of oil per annum. Since Swedish civilian peacetime consumption is in the neighborhood of 1,400,000

We used its own power to lift fluid in 11



NIXON DUAL ZONE INSTALLATION

A TYPICAL EXAMPLE OF NIXON GAS-LIFT ADAPTABILITY!

You can't actually lift yourself by your own bootstraps, it's different with oil wells, as our Nixon Gas-Lift engineers have proven. They not only made a well produce by its own bootstraps, but also, lift the production of eleven others.

Out in a West Texas field there is a producing sand at approximately 3000 feet, varying in thickness from 200 to 300 feet. But bottom hole pressure has declined to a point where the wells no longer flow naturally.

However, overlying the entire area at approximately 2400 feet, is a high pressure gas sand. Our Nixon Gas-Lift engineers recommended utilizing the energy in the upper gas sand by a Dual Zone installation of Nixon Surface Control Gas-Lift System.

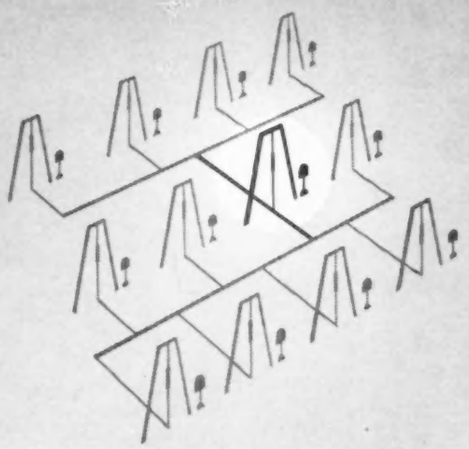
In one centrally located well, the 7" casing was perforated opposite the high pressure gas sand. A string of 2½" tubing was run to bottom and a hook wall packer set just below the high pressure sand.

Gas is brought to the surface through the annulus between the 2½" tubing and casing at 900 lbs., and reduced through a Nixon Selective Flow Differential Regulator to 300 lbs. This gas pressure is then used to lift the fluid from its own well and eleven others.

The 1½" tubing, inside the 2½" string, carries a regular Nixon Surface Control Gas-Lift installation with Bottom Hole operating valve. Operating gas pressure enters thru the annulus between the two strings of tubing, intermitted thru the operating valve, to lift

s) w n "BOOTSTRAPS"

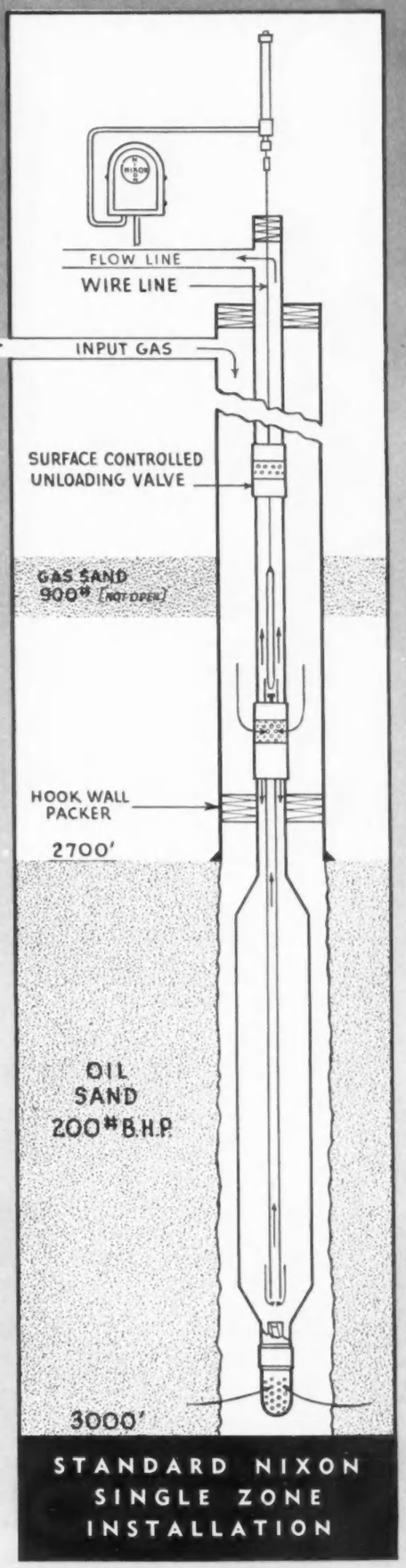
i; 11 more wells!



fluid as it builds up in the inner tubing string. This is a closed System and none of the operating pressure reaches the producing sand. The other eleven wells have standard closed Nixon Surface Control Gas-Lift installations.

By making this installation, our engineers saved the operator the expense of drilling a gas supply well or the installation of a compressor station. They make it possible for the operator to take out all the oil each well is capable of producing without changing or adding to the gas-lift equipment, and without injuring bottom hole pressures.

Scores of fluid-lifting problems are being economized, modernized and simplified by Nixon Gas-Lift engineers. Tell them your problems. They have a Nixon Surface Control Gas-Lift installation that will save you money.



STANDARD NIXON SINGLE ZONE INSTALLATION

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A DIVISION OF GENERAL AMERICAN TRANSPORTATION CORPORATION

metric tons per year, it would be necessary to construct about 10 works of the type intended for Narke, if the country's entire oil requirements are to be filled from local oil shale deposits.

Gas Has High Heat Value

The gas obtained in the shale plants consists mainly of methane with a very high heating efficiency. For the present it is being used in steam boilers to generate steam for operating the electric power plant turbine. However, the gas could also be used for other industrial purposes, or as a substitute fuel for motor vehicles if the oil plant were situated near an industrial center or important town with gas loading stations and equipment. Alternatively, the gas could also be used for heating or lighting purposes.

Sulphur production forms another possible source of revenue from the works. The Kinnekulle shale contains 6½ to 8½ percent sulphur, while that at Yxhult approximates 10 percent. The Kinnekulle plant has been successful in overcoming difficulties associated with the sulphur dioxide content of the smoke, and its sulphur has a trade value of over 100 kronor (over $23.80) per metric ton.

Kali contents of the shale coke from plants sufficiently large to meet the country's annual requirements would be expected to yield about 10,000 metric tons of fertilizer yearly, which would free Sweden from dependence upon foreign supplies for this commodity.

In addition the oil shale has been found to contain various rare metals in its bituminous layers. Each ton of the Narke shale has been found to contain an average of 1 pound and 1 ounce of Vanadium, which has a value of about $4.80 at present. About 150 tons of Vanadium could be produced yearly by a shale oil plant with an annual capacity of 10,000 metric tons. However, the question of a rational production has not been solved fully.

Molybdenum also is found in the Swedish shale, though only to a small extent. Uranium and radium are other possible metal products.

The possibilities represented by the by-products mentioned are such as to provide a peace-time value exceeding the value of the corresponding oil, if satisfactory production methods can be devised.

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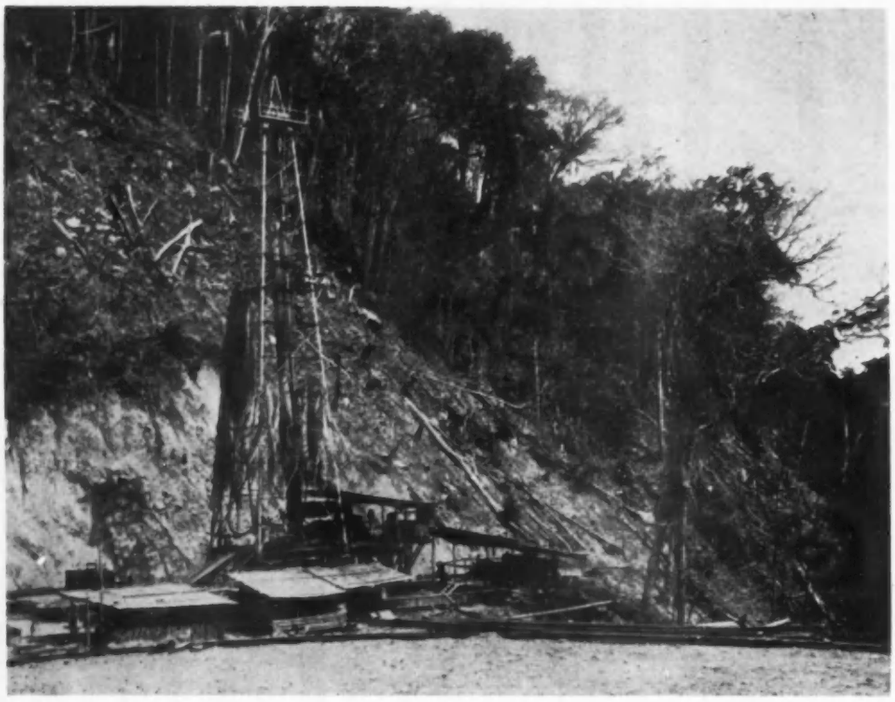


Drilling on the Barco Concession.

Colombian Wildcatting to Continue Over Wide Area

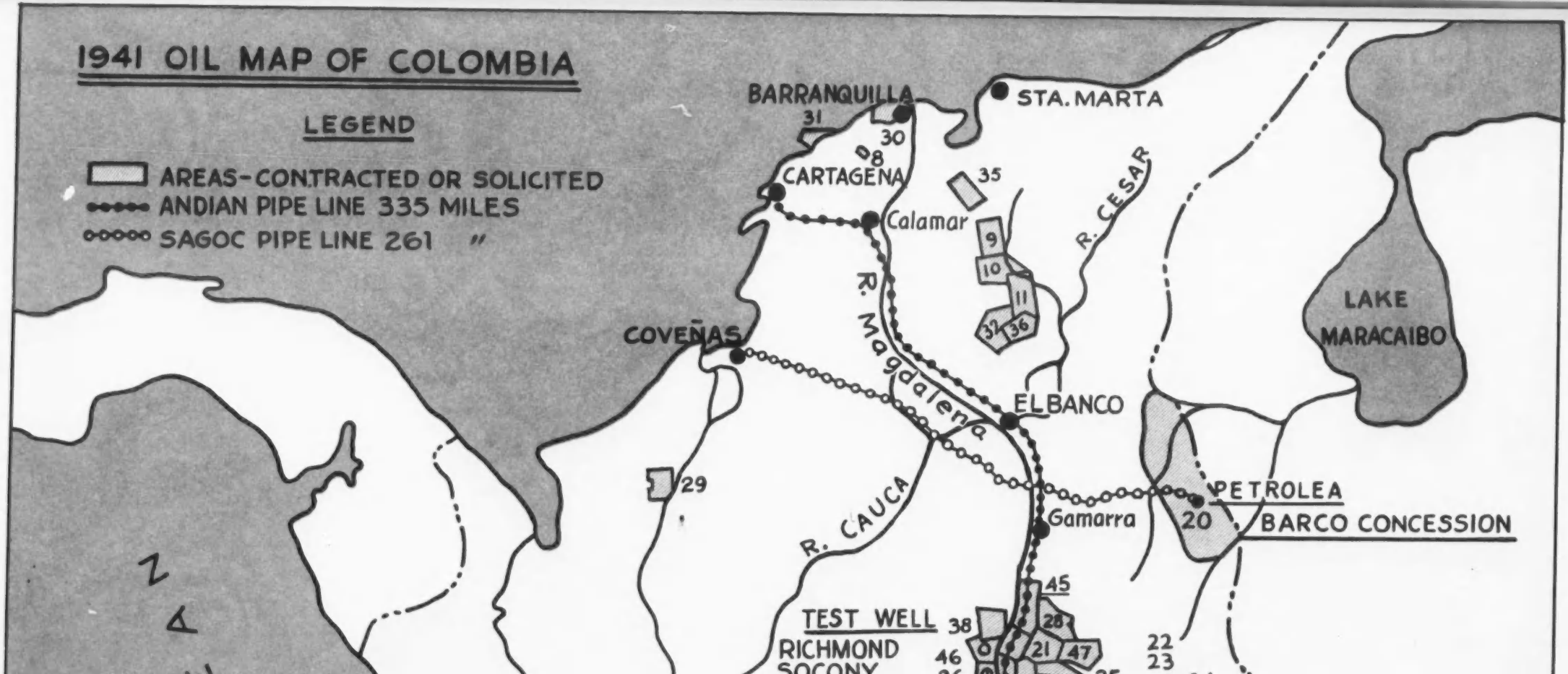
By J. V. HIGHTOWER, Foreign Editor

COLOMBIAN production last year, thanks to operation of the Barco pipe line and to a doubling of exports to Canada, reached a new high of 25,556,000 barrels as against the 1939 output of 23,848,000 barrels. Except for several million barrels of crude refined, this production was exported; the exports for 1939 and 1940 being 19,000,000 and 22,314,000 barrels respectively.

No marked developments occurred in Colombia last year, although wildcatting, which has continued into 1941, was carried on over a wide area, particularly in the Magdalena River valley, but were not very successful. Socony-Vacuum Oil Company's surrender of its Restrepo concession was an unfavorable development. The company gave up the property after making extensive tests of this 49,232-hectare area lying in the upper Magdalena River valley. The La Cira and Infantas fields of the De Mares concession continued to lead in production with a daily average of about 62,000 barrels. Production from the Barco concession, where the Petrolea field yielded virtually the whole output, amounted to less than 18,000 barrels daily.

Although the Barco has yet to be fully explored, the performance of the concession last year was not encouraging. In its annual report for 1940 Socony-Vacuum Oil Company admitted that "In South America the operations of the Colombian Petroleum Company were disappointing." This report envisaged a heavy write-off of the Barco investment. Speaking of a $75,000,000 reserve for contingencies the report declared, "Of this reserve, $16,000,000 is definitely assigned to the investment in and advances to Colombian Petroleum Company and South American Gulf Oil Company operating in Colombia, South America. A revised estimate of proven recoverable crude reserves in the Barco concession indicates the possibility of this loss, if no other commercially producing structures are developed there. Drilling during the next two years will probably be required to test such structures. The total investments in and advances to these companies amounted to $26,201,414.62. After $3,700,000 losses written off against 1940 earnings and the contingent reserve stated above, the amount of investments in and advances to these companies remaining on our books is $6,501,414.62."

This heavy discount comes only a year and a half after the South American Gulf Oil Company (owned jointly by Socony-Vacuum Oil Company and The Texas Corporation) completed its $18,000,000 pipe line from the Barco


1941 OIL MAP OF COLOMBIA
LEGEND
AREAS-CONTRACTED OR SOLICITED
ANDIAN PIPE LINE 335 MILES
SAGOC PIPE LINE 261 "
BARRANQUILLA
STA. MARTA
CARTAGENA
Calamar
R. CESAR
R. Magdalena
COVEÑAS
LAKE MARACAIBO
ELBANCO
PETROLEA
BARCO CONCESSION
Gamarra
R. CAUCA
TEST WELL
RICHMOND
SOCONY
31
30
8
35
9
10
11
32
36
29
45
38
28
21
47
46
22
23
20

PACIFIC OCEAN
RICHMOND
SOCONY
TROPICAL
SHELL
B.B.
EL CENTRO
DE MARES CONCESSION
MEDELLIN
PTO. Berrio
LA DORADA
HONDA
Ibague
GIRARDOT
BOGOTA
VILLAVICENCIO
LLANOS REGION
RIO META
R. Magdalena
Buenaventura
CALI
46
26
3
12
21
47
22
23
25
27
24
48
49
50
1
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13
56
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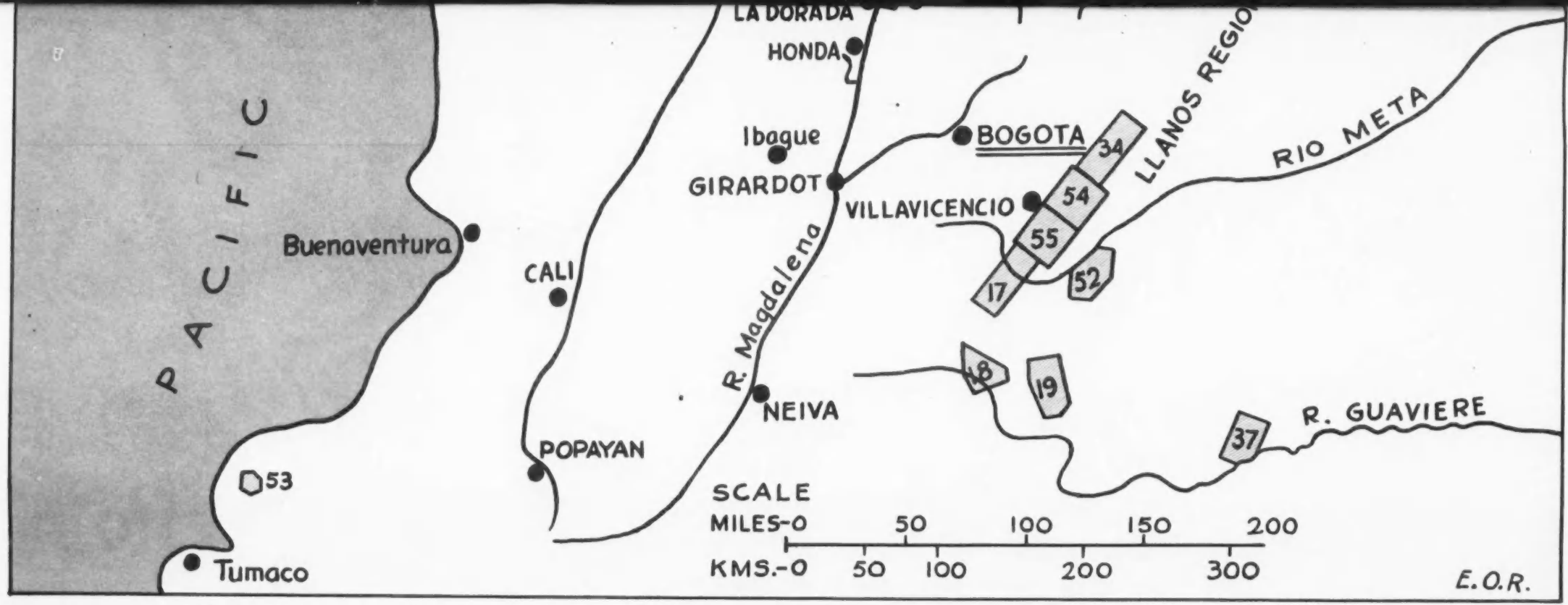

PUBLISHED IN CONNECTION WITH THE ANNUAL INTERNATIONAL SURVEY NUMBER OF THE OIL WEEKLY • • • MAY 12, 1941.

INDEX TO PROPERTIES SHOWN ON MAP

Number On Map	Solicitor or Concessionaire	Area Hectares (2.47 Acres)
1.	Tropical Oil Co. De Mares Concession	430,065
2.	Sociedad Nacional del Carare	34,783
3.	Juan de Dios Gutierrez—transferred concession to Tropical Oil Co.	16,926
4.	Carlos Botero Mejía	39,537
5.	Manuel Toro	5,091
6.	Pedro Londoño Saenz	49,959
7.	Private properties	16,154
8.	Private property	4,510
9.	Cia. de Petroleo La Perla de Colombia	49,985
10.	Cia. de Petroleo La Estrella de Colombia	48,568
11.	Cia. Anglo Colombiana de Petróleo	47,784
12.	Cia. de Petróleo El Condor	47,810
13.	Cia. de Petróleo Shell de Colombia	49,906
14.	Consorcio Minero Nacional—transferred to Cia. de Petróleo El Condor	44,258
15.	Bernardo Mora—transferred to Shell No. 13	50,000
16.	Evaristo Obregon Arjona—transferred to La Perla	42,546
17.	Cia. de Petróleo Shell de Colombia	100,000
18.	Cia. de Petróleo La Peral de Colombia	99,523
19.	Cia. Anglo Colombiana de Petróleos	99,319
20.	Colombian Petroleum Co.	200,000
21.	Cia. de Petróleo del Carare	49,636
22.	Wm. A. McCarthy	20,520
23.	Hernando Salazar	9,304
24.	Socony-Vacuum Oil Co.	20,040
25.	Luciano Restrepo—transferred to Socony-Vaccum	49,232
26.	Cia. de Petróleo del Valle del Magdalena	32,880
27.	Carlos Arturo Pinzón	12,609
28.	Sindicato de Inversiones	45,905
29.	Roberto Peña	44,954
30.	Sindicato de Inversiones	49,940
31.	Daniel A. Del Rio Optioned by Texas	20,141
32.	Cia. Petrolera de Bogotía	47,852
33.	Texas Petroleum Co.	19,920
34.	Texas Petroleum Co.	100,000
35.	Jaime Samper	43,500
36.	Rene Granger	18,514
37.	Richmond Petroleum Co.	100,000
38.	Salvador Camacho Roldan	49,468
39.	William Neilson	45,000
40.	Francisco Rocha Vargas	3,383
41.	Mora Hermanos y Pelaez Hermanos	42,336
42.	Jaime Gutierrez	42,199
43.	Carlos A. Narvaez	36,015
44.	Francisco Laserna	18,353
45.	Alberto Isaza	49,770
46.	Luis Alberto Villamizar	22,995
47.	Hernando Franco	48,970
48.	Frederick Ryan	19,328
49.	Tropical Oil Co.	7,857
50.	Martin Thieves	49,580
51.	Giovanni Serventi	49,431
52.	Antonio Borda Carrisoza	99,938
53.	Antonio José Castro Borrero	16,540
54.	Gonzalo Mejía	99,000
55.	Regalías Petrolíferas Colombianas S. A.	95,128
56.	Cia. Explotadora del Carare	96,000

to Covenas. Last year the crude oil pumped through the 12-inch line amounted to only about half its carrying capacity with present pumping equipment. Colombian Petroleum Company is far from calling it quits on the Barco, however. In the latter part of 1940 a new producing area was indicated by the successful completion of a small producer, Tres Bocas 1, which came in at around 3000 feet after plugging back from 5000 feet. This spring the company spudded Tres Bocas 2 for another test close to the first well. At present the company is drilling another wildcat, Socuavo 1, below 8400 feet. The well is a test of the Cretaceous. On the South Sardinata structure of the Barco the company last month was rigging a third wildcat, South Sardinata 1, 7 kilometers west of the Petrolea field.

Magdalena River Area

The Magdalena River valley south of the De Mares concession underwent considerable exploration and wildcatting following Shell de Colombia's discovery of a sand at 2500 feet on the Monte Oscuro anticline east of Nare on the Magdalena. The company's Monte Oscuro 1, was abandoned. A second well was started in June. The company abandoned its Puerto Parra wildcat after drilling to 10,920 feet, a record depth for Colombia. A Shell de Colombia wildcat is drilling on the Casabe property across the Magdalena River front at Barranca Bermeja. Sociedad Nacional del Carare was drilling its Las Monas wildcat below 5200 feet on the Carare concession, and was drilling its Monte Oscuro wildcat a few miles southwest of the northeast corner of the concession. Sociedad Nacional del Carare abandoned its San Fernando 2 wildcat at 9272 feet early last year. On its concession bordering the Magdalena and north of Shell de Colombia's Mora concession, El Condor abandoned Baul 1, at 6918 feet. Exploratory drilling has continued this spring in the valley territory. A Socony-Vacuum Oil Company subsidiary is drilling a wildcat, Cimitarra 1, a wildcat just across Magdalena River from Puerto Wilches. At the end of last March El Condor was drilling Casabe 1 below 1400 feet on the Yondo concession for the first test in the state of Antioquia.

On its properties north of the De Mares concession Socony-Vacuum Oil Company drilled several tests in the upper Magdalena region. The company's Narino 1 wildcat, 25 kilometers east of Puerto Wilches and situated on the Restrepo concession, was abandoned because of mechanical difficulties. Narino 3, near the middle of the concession, was abandoned at below 10,000 feet after small but unimportant quantities of oil were found. Peralonso 1, a wildcat 10 kilometers north of Narino 3, was suspended at 9274 feet. On the Las Monas structure, in the southeastern part of the Restrepo concession, Las Monas 1 produced a few barrels daily, but a second well there was a failure. The disappointments encountered in the concession resulted in its surrender.

Small Domestic Market

The small domestic market for refined products in Colombia has not encouraged expansion of the country's refining and pipe line facilities. Tropical Oil Company's plant at Barranca Bermeja, with a daily crude throughput of about 15,000 barrels, is the only refinery in Colombia except the little 500-barrel plant of Colombian Petroleum Company at Petrolea. As for pipe line construction, the last job of any importance was the South American Gulf Oil Company line completed in late 1939. Regular operation of this line last year was partly responsible for the increase in Colombian production by providing capacity for all the oil that could be taken from the Barco.

Last year some new acreage was granted or applied for in Colombia. Richmond Petroleum Company, continuing its exploratory program, acquired an additional 311,051 acres in the Magdalena River valley. Compania Anglo-Colombiana de Petroleos received a concession of 245,000 acres in the Llanos region. Regalias Petroliferos Colombianas S.A. applied for a concession covering 235,000 acres also in the Llanos region.

No material changes occurred in the Colombian petroleum laws in 1940. The government's control over oil lands was affirmed in a supreme court decision to the effect that the conveyance of property between private parties did not affect the government's ownership of oil. The decision was in accordance with a law of 1873 which gave the oil rights to the government.

Mountains and jungles combine to make selection of drilling sites difficult.

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Tropical Oil Company's dehydration and desalting plant. Tank battery on right is dehydrating phase, left desalting.

Dehydration and Desalting of Colombia Crude

By BEN F. ZWICK, Tropical Oil Company, El Centro, Colombia

PRESENT scale dehydration operations as carried out by the Tropical Oil Company in Colombia at its low-cold-test plant is probably one of the largest individual units of this kind in the oil industry. The original treating of wet crude started in 1928, by batch treatment of a few isolated wells making water, up to the present scale of centrally treating some 37,000 barrels a day of emulsified crude, which constitutes approximately 60 percent of the field production.

In addition to the low-cold-test plant, a high-cold-test combination dehydration and desalting plant is being operated for treating of wet crude processed by the local refinery. This plant is located in a different part of the field and operates entirely apart from the low-cold-test plant, handling some 6000 barrels of emulsified crude through both the dehydration and desalting phases of the plant, the total volume of both plants being around 43,000 barrels of emulsion per day.

Original treating of wet crude, as mentioned above, started in 1928 by batch treatment of a few isolated wells making water. During the early stages, the method of treatment was to pour a few gallons of chemical into a tank of wet crude, agitate, with gas from either one of the gas lines in the field or gas from the casing head of a nearby well, for several hours and allow the water to settle. The water was then drawn off and the oil tested and pumped to the tank farm for shipment. This method worked fairly well until the oil water mixture changed to a tighter emulsion and heat was required in addition to the chemical for proper reduction of the emulsion. After the addition of heat was found necessary, the batch treatment in the field at individual gathering stations proved to be too costly when considering the large area covered by the producing field of approximately 18 kilometers long by 5 wide. It was therefore necessary to study the possible future development of the emulsion problem, and from this study, the present system of gathering all emulsified crude and centrally treating it resulted. It might be well to mention that individual well flow-line treatment was also done, but for the reasons already mentioned, was not deemed feasible.

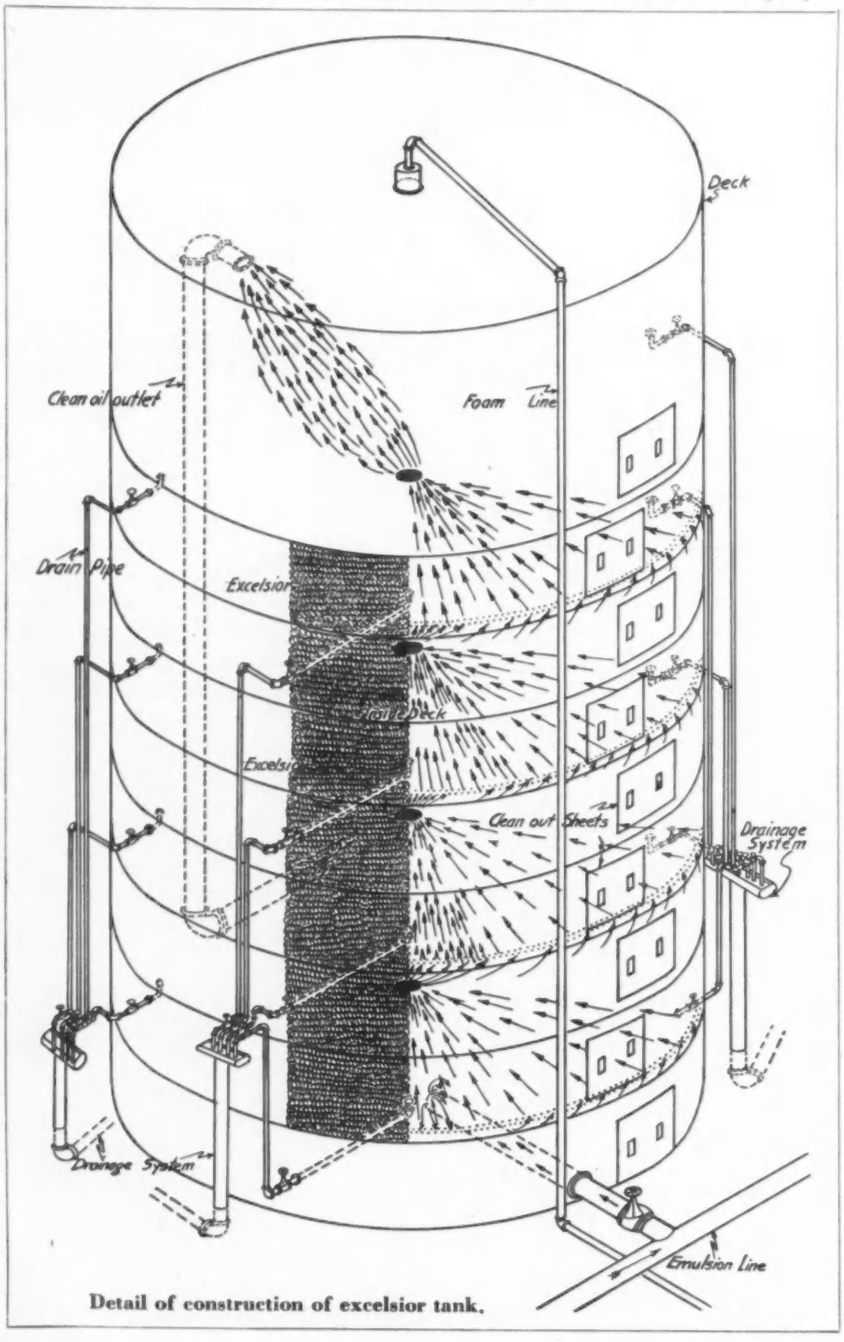
Description of Plant

Thermo-chemical treatment is the process used at both plants. The emulsified crude is pumped from the field gathering stations to the emulsion receiving tank at the plant. From the receiving tanks it passes through the oil-field boilers, converted into heaters, to oil-and-gas separators from which it flows upward through the excelsior tanks, thence to the settling tanks. A vacuum is held on the gas separators and all vapors are taken by the gas plant, the gas having a higher gasoline content

than the average well gas at the field gathering stations.

Chemical is injected into the emulsion stream as it leaves the receiving tanks. Sufficient agitation with the emulsion is obtained in the flow through the system to give the desired effect for a good break before it reaches the excelsior tanks. About 85 percent of the water contained in the emulsion is drained off at the various levels of the excelsior tanks, the rest being drawn off at the settling tanks.

In the desalting phase of the high-cold-test plant, the process is essentially the same as in the dehydration process except that hot fresh water is added before it enters the heaters. Also, chemical is injected into the fresh hot water stream before entering the crude. A centrifugal pump together with a mixing valve is used between the heaters and the oil-and-gas separators to give a more thorough mix of the fresh water and the oil. It was learned that a differential pressure of 10 pounds on the mixing valve and the pump speed at 900 r.p.m. gives optimum mixing. A pump speed of 1800 r.p.m., tried first, resulted in too much emulsification and difficulty was had in reducing the mixture to the proper limits of B. S. & W. even though the salt content was lowered.



Detail of construction of excelsior tank.

Both the low-cold-test dehydrating plant and the high-cold-test combination dehydrating and desalting units described above are the result of a number of years of careful study on the part of company engineers and the engineers of one of the leading manufacturers of chemicals for the treatment of oil field emulsions and desalting of crude.

All experiments for the betterment of treating conditions have been tried out first on a laboratory scale before being put to a plant test. For example: in trying out new chemicals for more efficient results, tests are run in the laboratory with 2 percent solutions of a number of different formulae. The reason for such a low concentrated solution used is to reduce the possibility of error to a minimum. If a higher concentration is used, such as 10 percent to 20 percent solutions or higher, one drop from the pipette might mean the difference in selecting the compound best suited for the particular emulsion or desalting problem being tested.

Tests are carried out with 8-ounce screw-cap graduated bottles using 100 cc. of emulsion each in whatever number of bottles are required for testing the various chemicals. Equal quantities of chemicals are pipetted into each bottle and given the same amount of agitation, usually 200 shakes, to thoroughly mix the chemical with the emulsion. This corresponds to the mixing obtained in the flow of the cold emulsion from the receiving tanks to the heaters. The samples then are placed in a hot water bath and allowed to reach a temperature of 180° F. which, through years of practice, was found to give the best results on local emulsions. They are agitated again with 150 shakes and returned to the bath for a period of 4 hours. A sample is then taken, directly above the water settled out, and centrifuged. The reason for taking the sample at this point is that some compounds tend to form a sludge directly above the water, leaving considerable emulsion unbroken. If, on the other hand, the sample were taken from the top, it would show a clean break and the wrong compound could very easily be chosen. The compounds are judged by the resulting tests as to which has given the largest reduction in emulsion percentage.

How a South American Operator Solved an "Impossible" Cementing Problem with TRINITY FIBRE Cement

. . . AND CEMENTED 20 WELLS IN CAVERNOUS LIME SO POROUS WATER WOULDN'T STAND IN THE HOLE!

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The same procedure was followed on 20 wells—with good cement jobs in every instance. The engineer said: "We tried everything else. Nothing but TRINITY FIBRE would do the job!"

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Cavernous lime—so porous water wouldn't stand in the hole—was cemented perfectly in 20 wells with TRINITY FIBRE Cement.

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TRINITY PORTLAND CEMENT COMPANY
COWHAM SYSTEM

ORDER FROM YOUR LUMBER AND BUILDING MATERIAL DEALER

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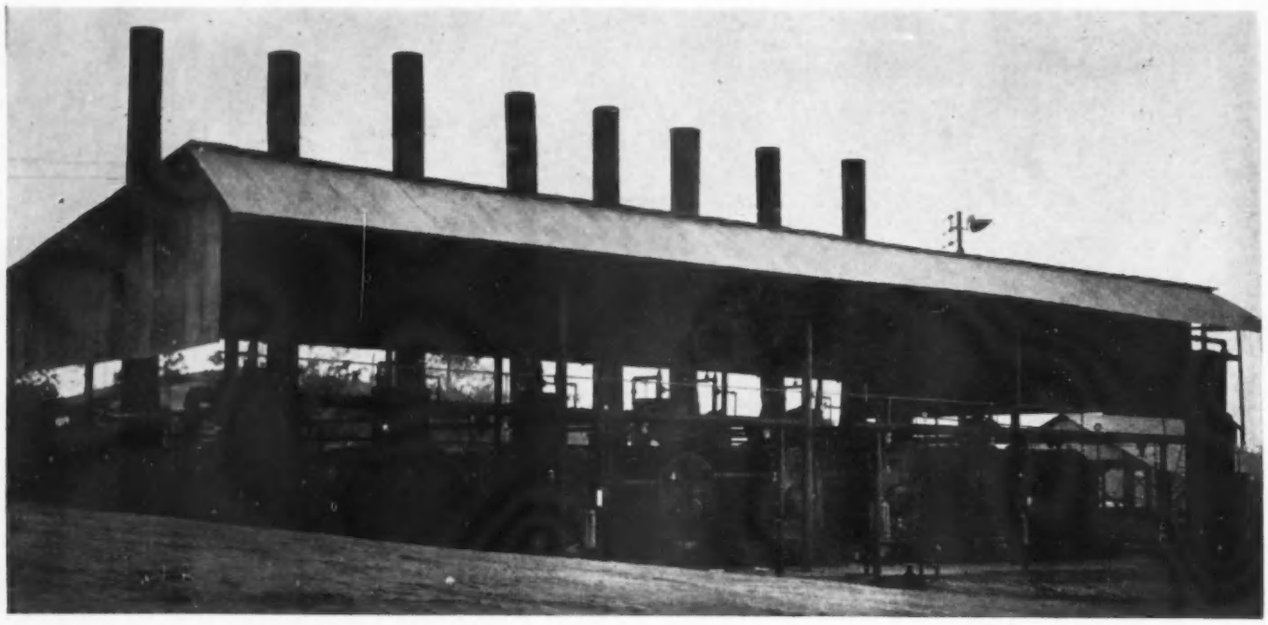
EVERY NEED

Tropical Oil Company's Treating Systems at El Centro

TROPICAL OIL COMPANY



Field boiler converted to oil heaters at the high cold test dehydration and desalting plant of Tropical Oil Company.

The better compounds are taken and additional tests run in the same manner but with lesser amounts of chemical until by elimination the best compound is determined, i.e., the one that gives the cleanest and fastest break in the lowest chemical ratio.

The same method of testing chemicals on the desalting problem was carried out in the laboratory but it was found that none of the chemicals available were suited for the particular fresh water emulsion. Samples of both the crude emulsion and the fresh water were then sent to laboratories of a chemical manufacturer whose chemists developed the compounds used at the present time, i.e., separate compounds for the dehydration and desalting phases. After the proper chemicals were developed, further laboratory tests were run using various percentages of fresh water added to the emulsion and it was learned that by using 15 percent fresh water, instead of 10 percent recommended by some authorities on chemical desalting, that approximately 33 percent better salt reduction was obtained.

It is of interest that during the testing of new chemicals, it was learned that the agitation after the emulsion was first heated to 180° F. temperature, gave a faster and cleaner break than heretofore when the second shaking was not made. Consequently, dry gas was injected at the bottom of each gas separator to give the additional agitation which has proven very beneficial not only in getting a better break on the emulsion but that additional vapors of the same gasoline content are supplied to the Gas Plant.

Various procedures on the desalting phase were tried in order to obtain the results being had at the present time, some of which were as follows:

1. Adding chemical to the oil and water mixture.

2. Adding chemical to oil before fresh water is introduced.

3. Adding chemical to fresh water before mixing with oil.

After the development of the separate compounds for dehydrating and desalting, and the one used on the desalting phase being partially soluble in water, the third method gives the best result.

As mentioned, the best treating temperature for both the dehydrating and desalting was found to be 180° F. It was also learned that far better salt reduction is had if the fresh water is heated to this temperature before adding to the oil which leaves the settling tanks from the dehydrating unit at about 120° F.

During the past several years the volume of emulsion has gradually increased, as more wells began to produce water, to such an extent that the capacity of the settling tanks became so limited that some additional measure was required for a faster settling of the water. To cope with this difficulty, a number of ways were tried for faster settling, such as pressure, settling filters of gravel, steel wool, coke and excelsior. Of all experiments tried, the excelsior or hay tank gave the best results. While the excelsior tank is not a new idea, it is interesting to note that this method of settling out the water proved to be the best solution to our problem.

The present tank was designed locally and is being fabricated to these specifications by one of the leading manufacturers of bolted tanks. The tanks are of 2000 barrel capacity, 21 feet 6½ inches I.D. by 32 feet 6½ inches high, divided into 8 sections from the bottom up, 3 feet ¾ inch to each section, with an 8 foot ⅝ inch surge chamber at the top. All sections, except the bottom 3-foot section and the surge chamber, are packed with excelsior. The emulsion enters the bottom section, passing through the excelsior of each succeeding section, alternating from the shell of the tank to the center. About 85 percent of the water in the emulsion is drawn off at the different levels and the oil leaving the surge chamber usually has 2 percent or less B. S. & W.

The first hay tanks used were packed with excelsior made from a soft wood, such as white poplar, using about 13,500 pounds of excelsior per tank. The tanks were operated for about 9 months, when they ceased to function properly. Upon inspection, it was found that the excelsior was packed practically solid with mud and silt. Washing the excelsior with water

INTERESTING *Inside* FACTS

About This Business of Making Whipstocks

Fifteen years ago we perfected the original Kinzbach Whipstock to the extent of performing successful sidetracking jobs at great savings in time, trouble, and money to operators. It was the result of a sound idea to fill a real need, worked out from practical field experience, thorough research, and development . . . not just the lucky outcome of a hatched-up proposition.

We have patented the valuable features of this whipstock, such as those illustrated below, and have consistently improved its design and construction through these fifteen years. The greatest advantage in the use of this type of equipment lies in the fact that the casing string is never parted. Consequently, there is no unsupported casing end above the whipstock, the lower nipple of which might be unscrewed or broken due to the friction and slap of the drill pipe, with the possibility of an expensive fishing job and loss of the window and all hole made below it. Casing strings are often sidetracked that are poorly cemented and, if completely severed, the lower section may either shift its position or settle lower in the hole, interfering with all operations from this point, or cause the bit to follow into the old hole alongside the casing. The segment of casing remaining, after milling a window with the tools illustrated, serves to support the whipstock and hold the casing above and below the window in alignment.

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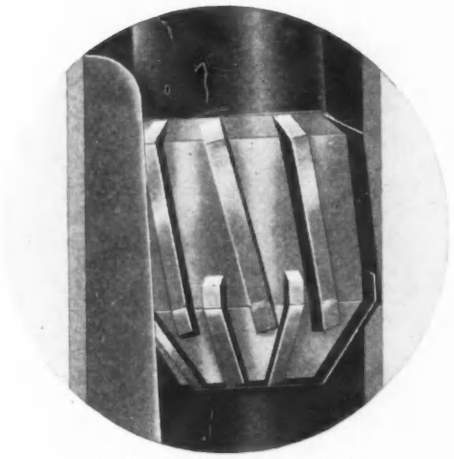
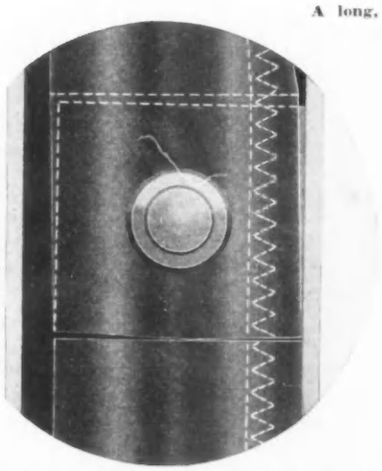
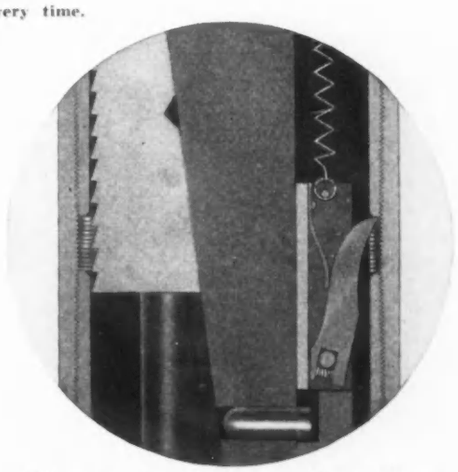


A long, clean window every time.



Hinge lays whipstock against pipe and is tightly bolted.



Trigger assures setting for mill-out between couplings.

KINZBACH

was tried and gave fair results after repacking.

The white poplar excelsior when wetted with the oil and water becomes soft and mushy, and the idea occurred that a tougher, more resilient wood might be a better material for this service. After trying a number of different woods, the local abarco, which is very tough and elastic, proved to be the best. Oak probably will come as near to resembling the abarco as any of the northern woods. An excelsior cutting machine was purchased and the excelsior made locally. The cost of the machine was approximately $500 or the price of enough excelsior to fill one tank. Present cost for filling a tank is around 40 percent of the original tank, including cost of lumber, operation of machine and depreciation on investment. It was found that the knives furnished with the excelsior machine were not suitable for cutting the local wood and new knives of a high carbon steel were made in the field shops. It takes approximately 10 days, cutting 24 hours per day, to cut enough excelsior to fill one tank with a single-unit two-block machine.

The green abarco must be dried so that it has lost nearly one third of its weight before it can be cut into excelsior. The logs are sawed into 4 x 6-inch lumber and dried to the proper degree before cutting into blocks to fit the machine.

It was also learned that the coarser cut excelsior works much better than a fine cut and that only 10,000 pounds per tank are required as against 13,500 pounds of the white poplar fine cut. Regardless of what type of wood is used, or thickness of the excelsior, care must be taken that each section of the tank is well filled but not too tightly packed. If packed too tightly, the throughput will be lessened and the tank may be damaged due to too much strain at the bottom sections, depending on the pressure at the inlet.

From our experience on local emulsions, the excelsior should be renewed about every six months, for most satisfactory operations. Also, for most favorable coalescing of the water particles in the emulsion, a throughput of not over 6000 barrels per tank per day should be expected.

The laboratory tests and plant design mentioned above were made to meet present treating conditions of Colombian low-and high-cold Test crude emulsions having the following characteristics:

Asphaltic base.

Gravity A.P.I. from 22° to 30°.

Viscosity of 200 at 100° F. and 300 at 85° F.

There is quite a variation in the B. S. & W. and salt content from day to day in the different wells; for example, one well varied from 0.6 percent emulsion and 0.2 percent water with 89 pounds per 1000 barrels of salt to 1.0 percent emulsion and 1.0 percent water with 440 pounds per 1000 barrels of salt, in a period of one week.

Grab samples for B. S. & W. and salt determinations are very inaccurate and should be discouraged. The method for taking samples locally is by use of an automatic sampler installed on the flow line.

The average stability of the emulsion treated at the plant from all wells is rather high. A typical daily test of the crude with a cut of 2.5 percent emulsion and 7.5 percent free water shows that after a 72-hour period of settling the amount of emulsion only dropped to 2.2 percent emulsion and 7.7 percent water. There are, however, certain wells where the stability is much less and that after a settling period of 24 to 48 hours, the emulsion is entirely reduced and a clean break occurs between the oil and brine. The oil-water ratio of the emulsion content averages 75 percent water and 25 percent oil.

Average analysis of the saline material in the brine is as follows:

K+Na	Ca	Mg	SO_4	Cl	CO_3	HCO_3	Bi	Total
15.79	5.42	.66	.41	35.50	—	.12	—	57.90

Salt content of the brine has been determined on many individual wells and the conclusion reached that while there is some difference from one well to another, the average as given above is sufficient for a general study of the entire field. From the analysis of different wells, there does not appear to be any relation between the salt content of the crude and their structural position.

Salt content of crude however, is determined daily, and by comparing the amount of salt in the brine with that in the crude, it is readily seen that not all the salt can be accounted for in the brine associated with the crude.

An average monthly summary of plant operating statistics is given in Table 1.

All dehydration and desalting operations are carried out by the production department with Colombian workmen and at the present time under the direct supervision of Dr. Jamie Botero L., a graduate petroleum engineer from the Colorado School of Mines and Dr. Osvaldo Pinedo, a graduate chemical engineer from Rensselaer Polytechnic Institute, in charge of the laboratory work.

Daily tests are made to determine emulsion percentages and salt content as well as experimental work on new chemicals or ideas for the continual betterment of plant operations.

In conclusion, it should be pointed out that this discussion pertains only to the treating of emulsion and desalting problems as found locally and that no one set of treating conditions can be adapted for all dehydrating or desalting plants and types of emulsions. Also, it often becomes necessary in an individual plant to vary the procedure from time to time to meet changing conditions.

TABLE 1
Summary of Plant Operating Statistics

	DEHYDRATION		Desalting
	L. C. T. Plant	H. C. T. Plant	H. C. T. Plant
Barrels emulsion treated—Total	1,142,845	237,665	168,031
Barrels emulsion treated—Daily	36,866	7,665	5,420
Barrels clean oil recovered—total	952,300	212,725	167,805
Barrels clean oil recovered—daily	30,719	6,862	5,413
Barrels water extracted in plant	190,545	24,940	226
Barrels fresh water added to crude	.....	.....	.....
Gallons Chemical used	.....	.....	38,170
No. 1	610	.....	.....
No. 2	.....	271	.....
No. 3	.....	.....	292
Ratio chemical to emulsion treated	1:78,700	1:36,800	1:24,200
Ratio chemical to clean oil recovered	1:65,600	1:33,000	1:24,100
Average treating temperature	180° F.	180° F.	180° F.
Average hours settling time	11	13.0	24
Average gravity of clean oil	24.5	27.5	25.8
Average percent emulsion in untreated oil	17.9	4.2	.7
Average percent free water in untreated oil	2.8	.2	.9
Average B. S. & W. of clean oil	.2	1.0	.5
Average percent water removed in plant	16.8	2.9	1.5
Lbs./M. bbls. salt in dehydrated crude	.....	.....	180
Lbs/M. bbls. salt in desalted crude	.....	.....	22
Ratio chemical to emulsion treated dehydrated and desalted	.....	.....	1:12,500
Ratio chemical to clean oil recovered dehydrated and desalted	.....	.....	1:12,500

Development Program In Prospect for Ecuador

The entire Pacific coastline and a great part of the interior, especially east of the Andes, in Ecuador is under concession to Ecuadorian and foreign oil interests, and under the influence of a sound petroleum law, Ecuador appears to be on the threshold of a considerable development campaign.

Among the larger foreign interests who hold petroleum concessions in Ecuador is Shell Company of Ecuador and the International Petroleum Company (Standard of New Jersey). One of the largest concessions on the seaboard is ostensibly held by a Colombian and an Ecuadorian, although the geological work, including numerous soundings along the shoreline at a distance of less than 600 miles from the Panama Canal Zone, is being done by Japanese geologists under the direction of a German.

Concessions in Ecuador are divided into two general classifications, "study concessions" and "concession contract." A "study concession" is a contract allowing four years for exploration. On or before the termination of the "study concession" the concessionaire may select any part or all of the area, depending upon the terms of the contract, and obtain thereon a "concession contract."

A "concession contract" is a bilateral contract entered into between the government and the concessionaire in which the rights and obligations of both parties are definitely set forth. Such agreements follow very closely the terms set out in an "88" lease form in Texas.

The following information on the various concessions in Ecuador has been obtained from different sources and, so far as the editors of THE OIL WEEKLY are advised, is up to date as of May 1, 1941. The data should be used in conjunction with the map of Ecuador, showing concession zones, oilfields and refineries, which is a part of this issue.

That portion of the map shown as No. 1, and consisting of a total of 166,826 hectares, involves several small concessions held by various companies, and embraces all of the productive territory in Ecuador. Some of the concessions have been condemned by dry holes. Among the companies holding concessions in Zone 1 are: Anglo-Ecuadorian Oilfields, Ltd., an English concern, with 6500 barrels per day production and a modern refinery; International Petroleum Company, with small production; Caroline Oil Company also with production; Concepcion Ecuadorian Oilfields, Ltd., Ecuapetrol, a German controlled company, and Petropolis.

In a separate discussion of Ecuadorial operations to-date information on the production and developments of the proven areas is given in detail.

Concession No. 2, amounting to 5000 hectares, is owned by Carlos Roca. C., a native Ecuadorian. No development has taken place on this tract.

Concession No. 3, amounting to 20,000 hectares, is owned by Colonel Julio Jauregui and J. A. Guijarro, Ecuadorians. Colonel Jauregui has been identified with the oil industry in Ecuador since 1924. No development work has been done on this concession.

Concession No. 4, amounting to 520,000 hectares, is divided into two tracts and is what is known as a zone of optional concession, or study concession. It is held by Ecuapetrol. It formerly was held in the name of Otto Wolf Koeln of Germany prior to the beginning of World War No. 2. At that time plans had been made to start active drilling operations and since the beginning of the war the concern has been reorganized under the name of Ecuapetrol. The same company has holdings in Zone 1 and drilling equipment had been ordered from Germany to drill a well. The concession contains a considerable portion of fairly level terrain and has an excellent airport on it.

Concession No. 5 is a concession contract held by Colonel Robert L. Morris of New Orleans and H. K. V. Tompkins of Houston and consists of in excess of 38,000 hectares. Geological work has been done on the concession and a structure mapped. Morris and Tompkins plan to drill a well on the concession shortly.

Two hundred yards off this point on the coast of Ecuador is where a very pronounced seepage of oil occurs each summer. The seep is of such extent that the beach is covered with chapote for several miles up and down.

Concession No. 6 is a study concession originally held by Senorita Wallis Boyer. It is now owned by Colonel Robert L. Morris and H. K. V. Tompkins. They have four years in which to convert it into a concession contract. Some geological work has been done on this concession which contains about 50,000 hectares.

Concession No. 7 is a concession contract owned by La Compania Minera Petrolera del Pacifico, as is Concession No. 9 also. The history of this concession is very interesting and the actual money behind "Pacifico" is shrouded in some mystery. No. 7 is supposed to contain about 100,000 hectares. See No. 9 for further details as to ownership.

Concession No. 8 is a study concession owned by Segundo A. Calisto, an Ecuadorian. It contains 100,000 hectares and the option contract on it expires in August, 1941. However, in the interim it can be converted into a concession contract if the owner desires.

Concession No. 9, containing

900,000 hectares is a study concession owned by La Compania Minera Petrolera del Pacifico, which also owns Concession No. 7 and to which reference already has been made. Concession No. 9 was originally applied for by Manuel Torres Peralta, an employe of the Department of Petroleum of the Republic of Colombia at the time the concession was negotiated, and Louis Martinez Delgado, a prominent Ecuadorian. The two applied for a study concession and after considerable negotiations it was granted in the name of La Compania Minera Petrolera del Pacifico, the head of which company is Gustavo Diaz Delgado who is related by marriage to the president of Ecuador. The concession, after it was negotiated, was offered to various American interests and individuals but at terms which were regarded as extraordinarily high. If it has been transferred to other interests no record of the change has been made public.

In the meantime a large force of Japanese geologists has been making a thorough study of the terrain and the ocean along the shoreline, soundings having been taken at numerous points not only along the shores of Concessions 7 and 9, but on shoreline of property, previously condemned by dry holes, on the St. Elena Peninsula. While the work is being done by Japanese, it is being directed by Franz Sillmann, a German professor of geology in the Ecuador School of Mines at Cuenca. The geological and other surveys appear to be considerably in excess of the work ordinarily done by a non-operating company desirous of disposing its property to an operating company, and include investigations not ordinarily undertaken for oil exploration. A portion of the shoreline of the concession in the State of Esmeraldas is indented with bays while another part of Pacifico's concession embraces half of the harbor of Esmeraldas, about 550 miles on an airline from the Panama Canal. Across the Esmeraldas River from the concession is located a Pan-American airport which is used jointly by Pan-American and a German aviation company called Sedta.

Concession No. 10 is a study concession embracing 1,700,000 hectares, owned by International Petroleum Company, which company has already done considerable geological work. Reports have been current that International Petroleum Company is ready to start drilling.

Concession No. 11 is the largest concession in Ecuador. It is a study concession originally granted to Anglo-Saxon Oil Company and is owned by Shell Company of Ecuador. A great deal of geological and geophysical work is reported to have been done on this property and plans had been made and drilling equipment ordered to start drilling a short time ago. It was planned to fly the drilling machinery (rotary rig) over the mountains. For some reason plans have been temporarily suspended. The concession is situated in the Eastern region and consists of approximately 10 million surface hectares.

The period of exploration is of five years from the date the contract was signed, which is from August 9, 1937. When this period is terminated and the extension in this case, the exploitation period will last 40 years and can be extended for 10 more.

Eight years after signing the contract the company will return to the government 50 percent of the concession, after 18 years 25 per cent of the total concession, after 28 years 12½ percent of the total concession and after 38 years the company can maintain a maximum of 400,000 hectares until the termination of the contract, including the extension, if any.

During the period of extension for exploration the same obligations and rights will prevail on the stipulations and legal conditions established for the principal period, during the extension of the period for exploitation, the royalty rights or contribution shown which is 6 percent, will be increased by 33.3 percent or they will pay 8 percent.

As provided in Article 24 of the oil law, the company will pay the government annually as a fee the amount of four hundred thousand sucres. (A sucre is about 6.6 cents.)

The guarantee deposited by the company is one million sucres. This deposit is to be returned as soon as an oil well, which produces for three consecutive days, or, in case of a previous total abandonment of the concession as soon as the expenses for the exploration, administration, etc. should be the same or in excess of the amount of one million sucres.

Within two years from the time the exploitation takes place, the company for the purpose of guaranteeing the compliance of its obligations, will give a bank guaranty for the amount of four million sucres.

In accordance with Article 14 of the oil law, the company should spend annually from the time the exploitation is initated, an amount not less than five hundred thousand sucres, and this obligation will cease as soon as the company has obtained potential production of 1 cubic meter daily for each 100 hectares of the area which at the time was included in the concession. All of the money invested in the concession such as purchases of materials, equipment, payment of administration, etc. will be credited to the amount of five hundred thousand sucres.

The company will deliver to the government as royalty rights for the concession the percentage of the net product of the crude oil shown to be as follows, and on all of the net production of crude oil without taking into account the oil which is necessary to use for the exploitation:

0— 50 kms.....	11 percent
50—100 kms.....	10 percent
100—150 kms.....	9 percent
150—200 kms.....	8 percent
200—300 kms.....	7 percent
300—600 kms.....	6 percent
600 or more kms..	5 percent

In accordance with Article 29 of the oil law the company will pay to the government as royalty on the natural gasoline made on the same lands of the concession 6 percent on double the value established for crude oil.

No special tax will be imposed on the work of the company's refinery during the period of the concession and its optional extension except an exclusive grant fee annually of five thousand sucres for each refining plant installed.

It is understood and expressly agreed that the total to be paid as tax and rent, or what will be substituted for the net profits on the operations of the concessionary, will be fixed and limited to 8 percent; this tax will be applied only on the operations in Ecuador. In addition to this tax they must pay the sales tax or its substitute and the impersonal taxes such as stamps, etc.

All capital employed in the operations of the concession is exempt of all fiscal or municipal tax or tax of any other kind.

Eighty-five percent of the workers employed by the company must be Ecuadorians.

"COMING EVENTS CAST THEIR SHADOWS BEFORE"

—Campbell

We see in the shadows of coming events nothing more than a challenge to the spirit of co-operation and good-fellowship that makes this western world impregnable.

The oil business is destined to play a part of growing importance in the defense and industrial sufficiency of the Western Hemisphere.

Having been Good Neighbors with oil men for 36 years, we are particularly well fitted to carry on now.

Oil men rightly point to Frick-Reid Stores as their warehouses, each an inexhaustible horn of plenty by reason of our close affiliation with the resources and foresight of leading manufacturers throughout these United States of America.

In Old and New Fields Our 77 Stores Are Your Warehouses

"...here's MY warehouse!"

FRICK-REID *Supply Corporation*

TULSA, OKLAHOMA

Bailing oil from seep at La Brea, near the Ancon field, Ecuador.

Ecuador Shows Steady Upward Trend in Crude Output

ECUADOR'S production, though small when measured by recovery figures of the United States, Russia, or Venezuela, is nevertheless of great importance to that country and to the West Coast of South America.

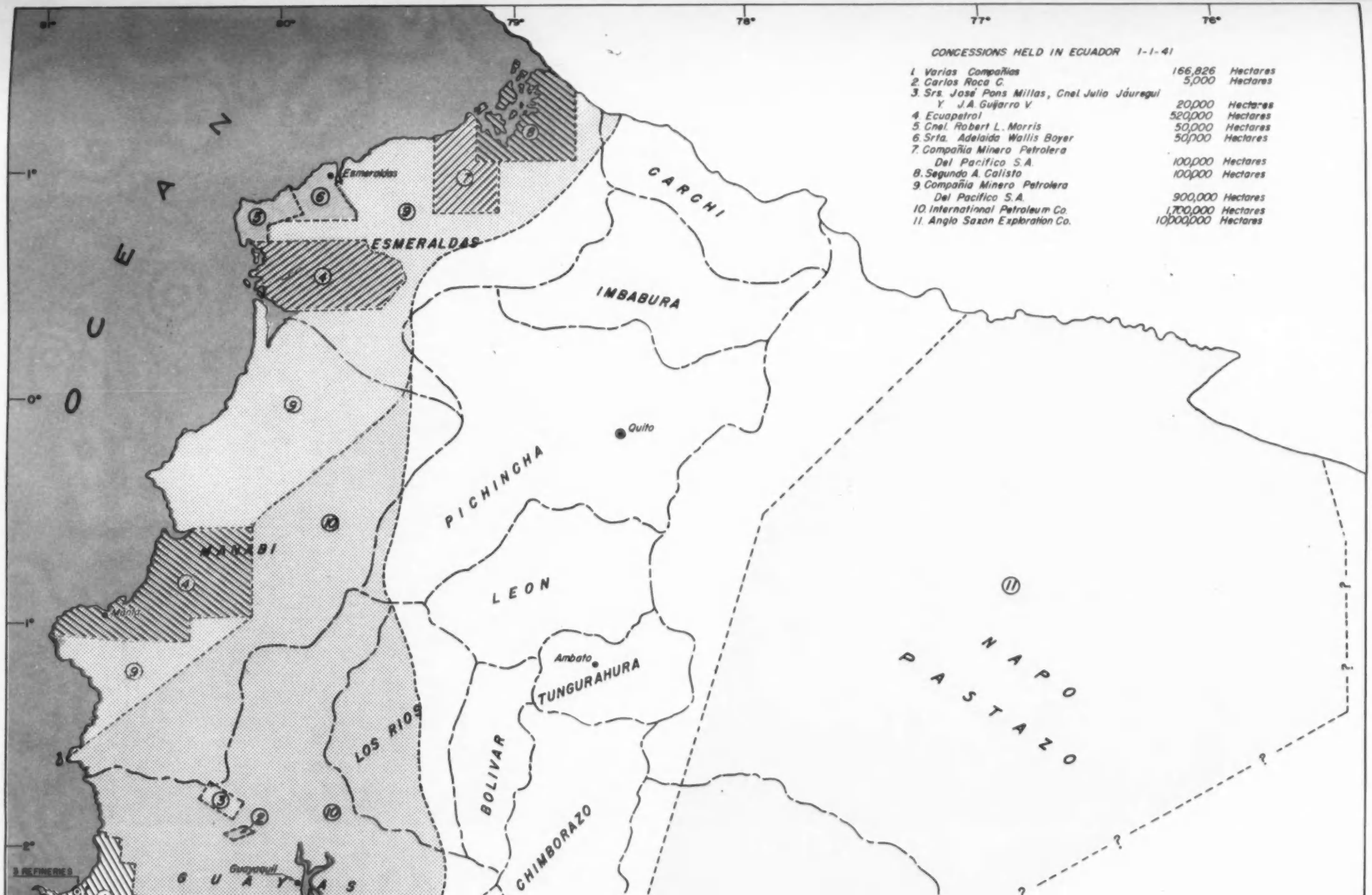
Table 1 shows a consistent upward trend in Ecuador's recovery from 1925 through 1931, when a then all-time peak of about 1,761,417 barrels of net production was recorded. In 1932 output slumped back to 1,597,403 barrels before resuming the upward trend again in 1933. Since the latter year the country has had progressively more and more oil available for market each year. In 1939 this volume amounted to 2,312,520 barrels, giving Ecuador a total recovery of 21,752,351 barrels of net oil during the 15-year period.

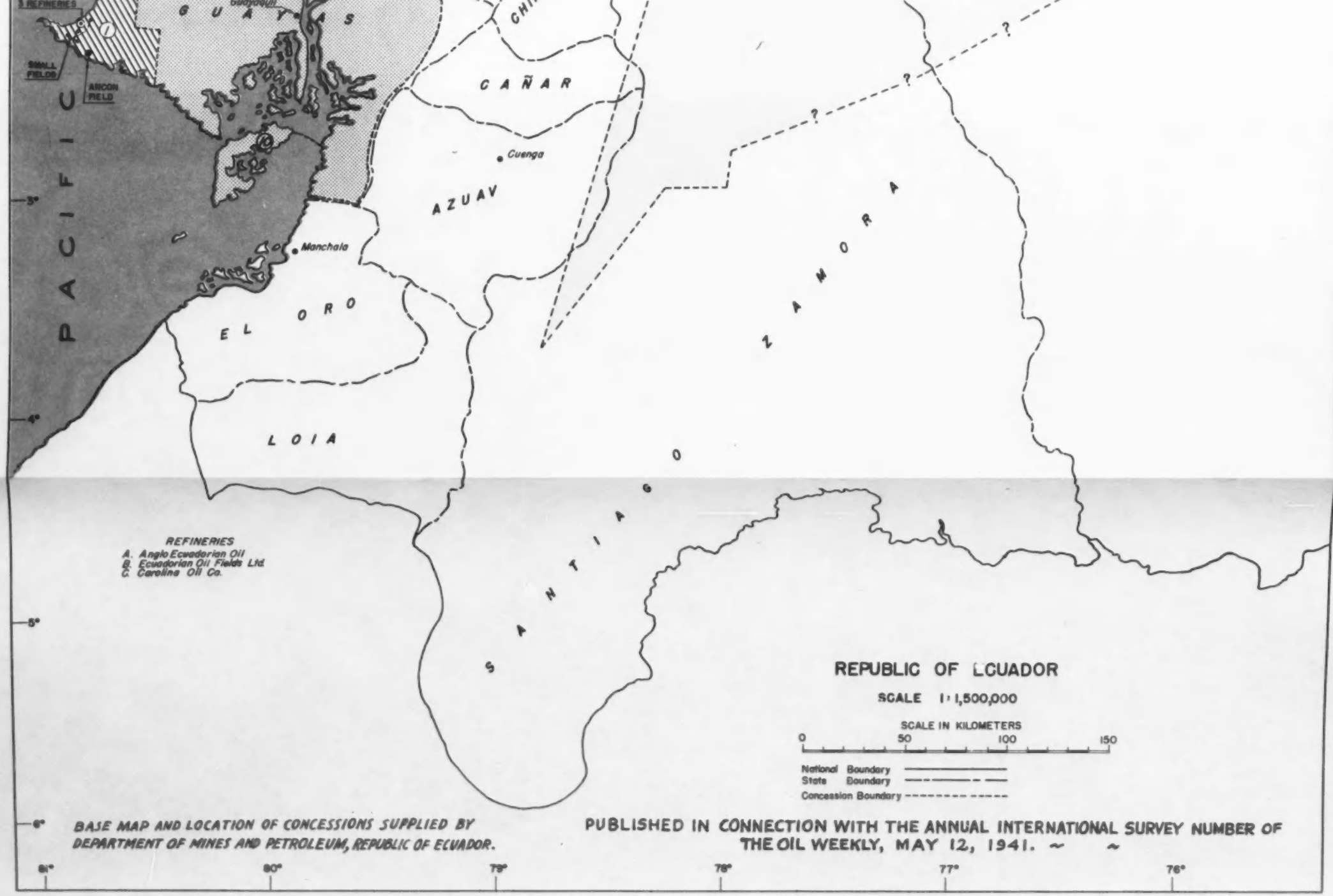
In 1925 Ecuador listed only three companies with commercial production: Anglo Ecuadorean Oilfields, Limited, Carolina Oil Company, and Petropolis Oil Company. Their aggregate take for the year was 130,365 barrels. At the beginning of 1940 the country had seven companies with commercial production which in 1939 accounted for a total production of 2,312,520 barrels. Identification of these companies will be found in Table 1 which, incidentally, is a condensation of crude oil production data taken from 113 pages of tables in "Fifteen Years of Petroleum Production in Ecuador," by Enrique Coloma Silva, director general of mines and petroleum in Ecuador.

A study of Ecuador's production history reveals that better than 90 percent of the oil brought to the surface and available for market use has come from wells of Anglo Ecuadorean Oilfields, Limited, the organization which developed the oil business on Santa Elena peninsula. Second in rank is Carolina Oil Company with an aggregate net production throughout the 15 years of 518,189 barrels. Third is Ecuador Oilfields, Limited, with an aggregate production of 441,485 barrels from 1925 through 1939.

It took five years for Ecuador to really get on the list of refining countries, in 1930. However, in the 10 years 1930-39, the country has accounted for 109,962,518 gallons of refined material, or about 2,618,155 barrels. Anglo Ecuadorean Oilfields, Limited, the country's largest producer of crude, likewise has been Ecuador's largest refiner, having accounted for 90,210,617 gallons of refined petroleum of the above total, or better than 80 percent.

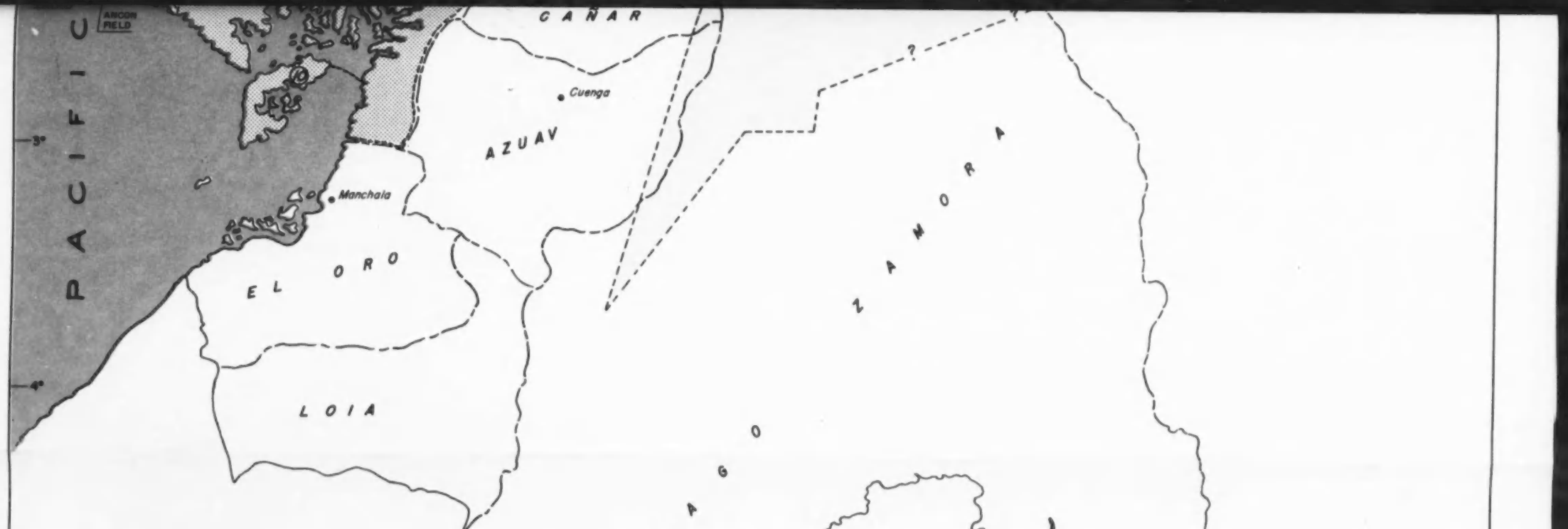
Up to that time, 1939 was the peak year of Ecuador's refining business, the three refineries oper-


81°
80°
79°
78°
77°
76°
1°
0°
1°
2°
OCEANO
Esmeraldas
ESMERALDAS
CARCHI
IMBABURA
Quito
PICHINCHA
MANABI
Manta
LEON
Ambato
TUNGURAHURA
LOS RIOS
BOLIVAR
CHIMBORAZO
NAPO
PASTAZO
Guayaquil
GUAYAS
3 REFINERIES
?
?
?
?
?
CONCESSIONS HELD IN ECUADOR 1-1-41
1. Varias Compañias 166,826 Hectares
2. Carlos Roca C. 5,000 Hectares
3. Srs. José Pons Millas, Cnel. Julio Jáuregui Y. J.A. Guijarro V. 20,000 Hectares
4. Ecuapetrol 520,000 Hectares
5. Cnel. Robert L. Morris 50,000 Hectares
6. Srta. Adelaida Wallis Boyer 50,000 Hectares
7. Compañia Minero Petrolera Del Pacifico S.A. 100,000 Hectares
8. Segundo A. Calisto 100,000 Hectares
9. Compañia Minero Petrolera Del Pacifico S.A. 900,000 Hectares
10. International Petroleum Co. 1,700,000 Hectares
11. Anglo Saxon Exploration Co. 10,000,000 Hectares



BASE MAP AND LOCATION OF CONCESSIONS SUPPLIED BY DEPARTMENT OF MINES AND PETROLEUM, REPUBLIC OF ECUADOR.

PUBLISHED IN CONNECTION WITH THE ANNUAL INTERNATIONAL SURVEY NUMBER OF THE OIL WEEKLY, MAY 12, 1941.


PACIFIC
ANCON FIELD
CAÑAR
Cuenga
AZUAY
Manchala
EL ORO
LOIA
ZAMORA
?
3°
4°

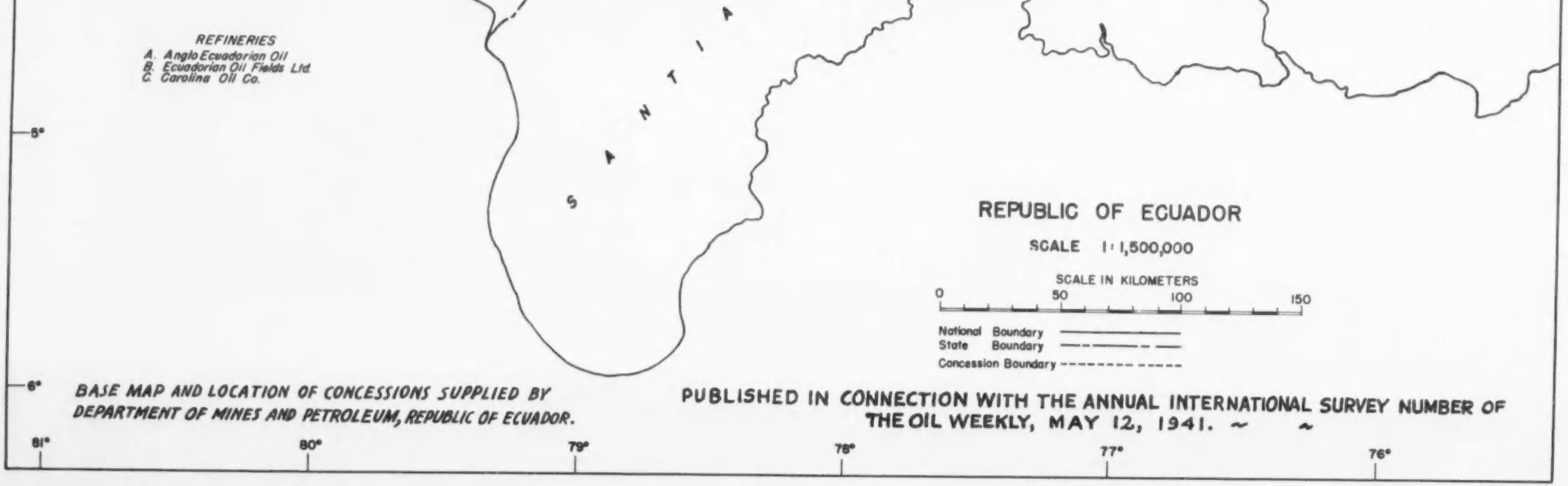

REFINERIES
A. Anglo Ecuadorian Oil
B. Ecuadorian Oil Fields Ltd.
C. Carolina Oil Co.
SANTIA
5°
6°
81°
80°
79°
78°
77°
76°
REPUBLIC OF ECUADOR
SCALE 1:1,500,000
SCALE IN KILOMETERS
0
50
100
150
National Boundary
State Boundary
Concession Boundary
BASE MAP AND LOCATION OF CONCESSIONS SUPPLIED BY DEPARTMENT OF MINES AND PETROLEUM, REPUBLIC OF ECUADOR.
PUBLISHED IN CONNECTION WITH THE ANNUAL INTERNATIONAL SURVEY NUMBER OF THE OIL WEEKLY, MAY 12, 1941.

TABLE 1

Production† of Crude in Ecuador—1925-1939 Inclusive. Figures in U. S. Barrels, based on report of Department of Mines, Republic of Ecuador

	Anglo-Ecuadorean Oilfields, Ltd.	Ecuador Oilfields, Limited	Carolina Oil Company	International Petroleum Company	Concepcion Ecuador Oilfields, Limited	Ecuador Tropical Oil Company*	Petropolis Oil Company	Total
1925	120,874	.....	8,763	.....	.....	.....	728	130,365
1926	280,227	.....	8,223	.....	.....	.....	696	289,146
1927	429,590	.....	5,636	.....	.....	.....	.....	435,226
1928	1,022,983	.....	6,650	.....	.....	.....	.....	1,029,633
1929	1,300,821	.....	16,903	.....	.....	706	.....	1,318,430
1930	1,500,602	32,135	19,092	.....	400	511	.....	1,552,740
1931	1,682,069	39,807	32,762	1,473	4,608	698	.....	1,761,417
1932	1,493,320	40,663	55,269	414	7,405	172	160	1,597,403
1933	1,523,298	38,797	44,167	338	8,544	293	4,465	1,619,902
1934	1,530,377	39,679	49,952	1,046	10,718	373	4,474	1,636,619
1935	1,634,506	31,003	54,204	1,019	10,100	460	493	1,731,785
1936	1,822,049	25,472	63,519	843	7,936	1,540	862	1,922,221
1937	2,069,622	28,071	53,476	779	8,605	1,151	1,177	2,162,881
1938	2,119,496	51,577	66,993	1,577	10,109	1,472	836	2,252,060
1939	2,145,765	114,280	32,582	1,222	15,160	1,748	1,763	2,312,520
Total	20,675,599	441,484	518,191	8,711	83,585	9,124	15,654	21,752,348

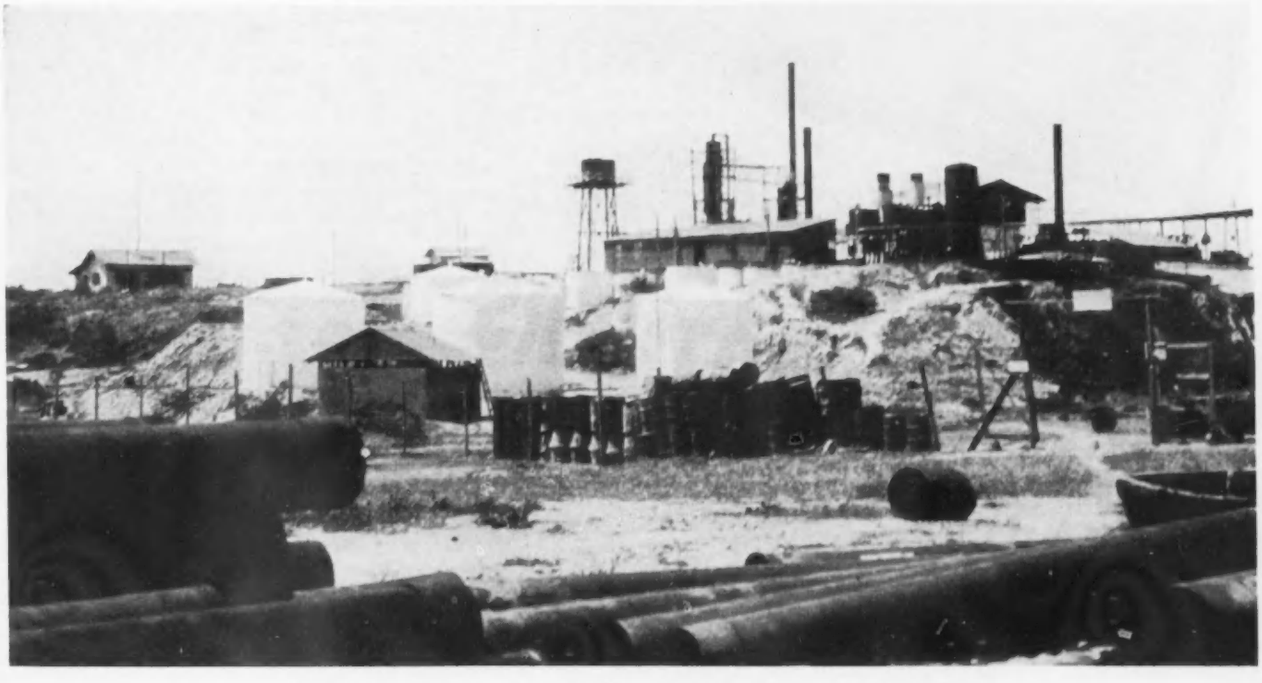
* In 1938 the old concession of this company was operated by Anglo-Ecuadorean Oil Fields, Ltd.
† Does not include amount consumed on leases, but is net production available for market consumption.

ating then having accounted for 17,669,868 gallons of refined products, or approximately 420,711 barrels during the year. These three companies in the order of rank as refiners were Anglo Ecuadorean Oilfields, Limited, Ecuador Oilfields, Limited, and Carolina Oil Company. The general trend in refinery activity has been steadily upward since it began in 1930. (The three refineries in Ecuador have a combined daily charging capacity of about 7300 barrels.)

An idea of the nature of the runs of Ecuador's refineries may be obtained from a breakdown of the 1939 throughput of 109,962,518 gallons. The yield was: 4,687,986 gallons of gasoline, 354,287 gallons of benzine, 1,487,179 gallons of kerosene, 2,269,651 of diesel oil, 88,330 of lubricating oil, 53,156 of gas oil, 8,356,660 of residue, 564 of pitch, and 372,055 gallons of losses. No aviation gasoline has been made since 1936, when Anglo Ecuadorean Oilfields, Limited, turned out a batch of 1850 gallons.

A comparison of the refinery throughput with the crude oil production fixes Ecuador as essentially an exporting country. Twelve small shipments of crude were made in 1927, but the government possesses no figures showing the amounts. Therefore, 1928 shows up in the records as the first year on which complete figures are available. During that year 17 tankers took out 959,630 barrels. In 1939 the export amounted to 1,638,557 barrels, bringing the total for the 1928-39 interim up to 17,480,494 barrels. It will be recalled that Ecuador's cumulative crude production through 1939 amounted to 21,752,-351 barrels. Because of the present situation in Europe, disposition of the 1939 exports is interesting. France got 524,379 barrels; Uruguay got 492,702 barrels; England, 82,561; Japan, 223,993 barrels; Brazil, 141,888; Germany, 77,143, and Argentina, 95,889 barrels.

Details of Ecuador field operations for 1940 will be found tabulated on page 144.



Anglo-Ecuadorean's refinery at Puerto Rico on the coast of Ecuador.

11 WAYS TO CUT PRODUCTION COSTS!

Producers who insist on cutting costs to the bone have made us the largest exclusive manufacturer of pumping equipment in the world. We have given them every co-operation for 22 years. JENSEN JACKS are such steady, dependable units that they exercise a sort of stabilizing influence on other equipment. Wells produce more satisfactorily and give less trouble. Pumpers have more time for other duties and can handle more wells successfully. The cost of lifting oil goes down and *stays* down.

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JENSEN BROTHERS MANUFACTURING COMPANY

Coffeyville, Kansas, U. S. A. . . . . EXPORT OFFICE: 50 CHURCH ST. NEW YORK CITY

World Consumption

[*Continued from page 44*]

55.1 percent of total world consumption for all purposes (1,140,923,000 barrels out of 2,071,167,000). In 1939, first year of the war, United States consumption increased to 55.9 percent (1,236,076,000 out of 2,212,965,000 barrels). Then war weighed more heavily on Europe in 1940, and the United States accounted for 59.7 percent of world use for all purposes (1,330,000,000 out of 2,227,110,000 barrels). And for 1941, with Europe's civil consumption still more stringently curtailed, it is indicated, by figures given above, that the United States may account for as much as 62.4 percent of the world total (1,436,000,000 out of 2,300,000,000 barrels).

Inversely, the remainder of the world consumed for all purposes approximately 44.9 percent of the world total in 1938 (930,244,000 barrels), 44.1 percent in 1939 (976,889,000 barrels), 40.3 percent in 1940 (897,110,000 barrels), and may consume only about 37.6 percent (864,000,000 barrels) in 1941.

But in the absence of that information, there is presented herewith a table on the known consumption in all countries, which embraces both civil and military use in the United States but only civil consumption in other countries. On that basis of a world total exclusive of foreign military use, the United States accounted for 59.5 percent of the world total in 1938, 61.0 percent in 1939, 66.3 percent in 1940, and likely will account for about 69.0 percent in 1941. And the foreign consumption (civil only), inversely represented 40.5 percent of the world total in 1938, 39.0 percent in 1939, 33.7 percent in 1940.

On this basis of a world total exclusive of military consumption anywhere outside the United States, Russia accounted for 9.0 percent of the total oil use in 1940, having consumed for civil purposes an estimated 180,000,000 barrels. That country thereby easily remained the second largest consuming country of the world, as well as the second largest producing country. The United Kingdom, however, barely retained third place among consuming countries, and Germany dropped back from fourth to fifth place, as Canada used about the same quantity as the former and more than the latter.

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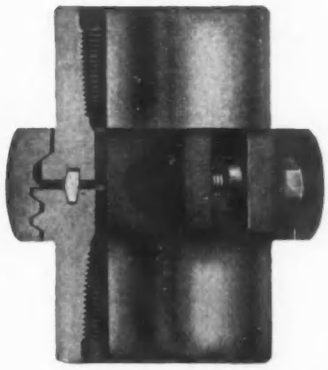
use RED-REX QUICK JOINT PIPE UNIONS

RED-REX combines the best features of the simple, easy-to-operate lip union, with the strength and security of a flanged and bolted connection.

ONLY THREE PARTS to a RED-REX Union . . . two hubs and a draw collar. The screw is an integral part of the draw collar and the seal ring is tightly wedged into one hub. Neither can drop out and get lost, causing expensive delay.

Red-Rex



HIGH PRESSURE STEEL UNION
3,000 and 6,000 lbs. test.

RED-REX, Quick Joint Pipe Unions Completely Described in 1941 Edition of The Composite Catalog . . . See Pages 1850-1851.

And just check the following exclusive RED-REX features:

1. SEAL RING:

A renewable bronze or steel seal ring in *every* RED-REX Union. 3 tapered sides provide leak-proof seal under high temperatures and pressures.

2. EXPANSION ALLOWANCE:

Loose threads between draw collar and hub allow for contraction and expansion, and permit misaligned hubs to be drawn together.

3. NON-STICKING:

A few turns on the screw and the collar spins off. Corrosion won't stick it.

4. SPEED:

Tightening or loosening a single screw (125,000 lbs. tensile strength) makes or breaks the joint. As the split collar is drawn together, the hubs are forced into sealing position on the seal ring . . . with equalized pressure all around.

RED-REX, Quick Joint Pipe Unions are made in a complete range of sizes and pressures in both malleable iron and steel. They are also made in special large sizes with blanking plugs, for pump suction, and blowout preventer use.

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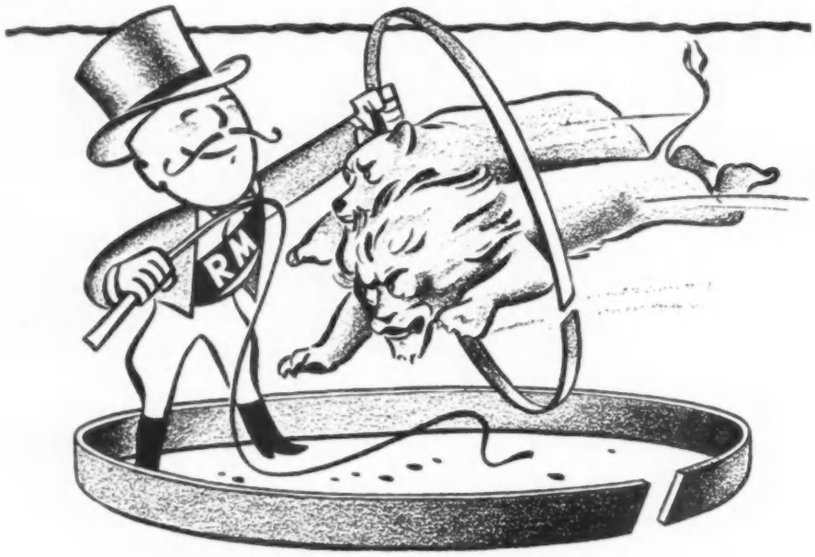

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World Production

[*Continued from page 41*]

States, which will make it easier for Britain to make such purchases.

Crude oil production in the United States naturally will show an increase in 1941 in response to the materially larger domestic demand, although the amount of increase will be determined by the extent to which the supply-demand relationship will be affected by a further decrease in exports, an indicated increase in imports, and additions to or withdrawals from storage.

In its effort to foresee the approximate amount of domestic crude oil production that would be needed in 1941 to meet requirements, the Bureau of Mines at the beginning of the year set down the possibility that domestic demand for petroleum might be up about 102,000,000 barrels over 1940, but that a further loss in exports might reduce to around 87,000,000 barrels the gain for the year in the total demand for all oils. The bureau pointed out, however, that nearly 40,000,000 barrels of all oils went to storage in 1940 and that a continuation of the 1940 rate of production into 1941 without change in stocks consequently would apply that quantity toward fulfillment of the indicated increase in total demand, leaving 47,000,000 barrels to be met in other ways. That amount might be supplied, the agency suggested, by withdrawing 10,000,000 barrels from storage, by increasing imports 10,000,000 barrels, and by stepping up crude-oil production 27,000,000 barrels, or 2 percent over the 1940 output.

That figure probably should be regarded as the minimum by which United States production actually may be expected to increase. It is conceivable that exports may be down more than the Bureau of Mines anticipated so far ahead, and in that event, total demand will be accordingly smaller than the bureau predicted. Moreover, imports apparently may be increased more than the agency foresaw. But on the other hand, a net reduction of stocks this year hardly seems likely, and domestic demand is exceeding early expectations. It is indicated, therefore, that crude production for the year easily may increase more than the 27,000,000 barrels, or 2 percent, suggested by the bureau in its long-range forecast.

WORLD CRUDE OIL PRODUCTION, BY COUNTRIES, BY YEARS

(Complete production history of world, in thousands of barrels of 42 U. S. gallons. Sources—Mineral Resources and Minerals Yearbook, except as otherwise indicated.)

	EUROPE													AFRICA			
YEAR	Albania	Czechoslovakia	England	France	Germany	Austria	Hungary	Italy	Poland	Roumania	[B]U.S.S.R. (Russia)	Other Europe	[B]Total Europe	Egypt	Algeria	Other Africa	Total Africa
1857										2			2				
1858										4			4				
1859										4			4				
1860								D		9			9				
1861								D		17			17				
1862								D		23			23				
1863								D		28	41		69				
1864								D		33	65		98				
1865								2		39	67		108				
1866								1		42	83		126				
1867								1		51	120		172				
1868								D		56	88		144				
1869								D		59	202		261				
1870								D		84	204		288				
1871								D		90	165		255				
1872								D		91	185		276				
1873								D		104	475		579				
1874								1	150	103	583		837				
1875								1	158	108	697		964				
1876								3	164	111	1,321		1,599				
1977								3	170	108	1,801		2,082				
1878								4	176	109	2,401		2,690				
1879								3	215	110	2,761		3,089				
1880					9			2	229	115	3,001		3,356				
1881					29			1	287	122	3,601		4,040				
1882					58			2	330	136	4,538		5,064				
1883					27			2	365	139	6,002		6,535				
1884					46			3	408	211	10,805		11,473				
1885					41			2	465	193	13,925		14,626				
1886					74			2	306	168	18,006		18,556				
1887					74			1	344	182	18,368		18,969				
1888					85			1	467	219	23,049		23,821				
1889					68			1	515	298	24,609		25,491				
1890					108			3	659	383	28,691		29,844				
1891					109			8	631	488	34,573		35,809				
1892					101			18	646	593	35,775		37,133				
1893					100			19	693	535	40,457		41,804				
1894					123			21	949	508	36,375		37,976				
1895					121			26	1,453	576	46,140		48,316				
1896					145			18	2,444	543	47,221		50,371				
1897					166			14	2,226	571	54,399		57,376				
1898					184			15	2,376	776	61,610		64,961				
1899					192			16	2,314	1,426	65,955		69,903				
1900					358			12	2,347	1,629	75,780		80,126				
1901					314			16	3,251	1,678	85,168		90,427				
1902					354			19	4,142	2,060	80,540		87,115				
1903					446			18	5,235	2,763	75,591		84,053				
1904					637			26	5,947	3,599	78,537		88,746				
1905					561			44	5,766	4,421	54,960		65,752				
1906					579			54	5,468	6,378	58,897		71,376				
1907					757			60	8,456	8,118	61,851		79,242				
1908					1,009			51	12,612	8,252	62,187		84,111				
1909					1,019			42	14,933	9,327	65,970		91,291				
1910					1,032			51	12,673	9,724	70,337		93,817				
1911					1,017			75	10,519	11,108	66,184		88,903	21			21
1912					1,031			54	8,535	12,976	68,019		90,615	214			214
1913					857			47	7,818	13,555	62,834		85,111	98			98
1914					781			40	6,436	12,827	67,020		87,104	753	1		754
1915					703			44	5,352	12,030	68,548		86,677	212	4		216
1916					656			51	6,587	8,945	65,817		82,056	404	8		412
1917				[J]	642			41	6,228	3,721	63,072		73,704	943	9		952
1918				363	270			35	6,032	8,730	27,168		42,598	1,935	7		1,942
1919		48	2	334	265			35	6,096	6,618	31,752		45,150	1,517	5		1,522
1920		69	3	356	246			35	5,607	7,435	25,430		39,181	1,042	4		1,046
1921		94	3	389	274			32	5,167	8,368	28,968		43,295	1,255	3		1,258
1922		120	1	496	319			31	5,227	9,843	35,692		51,729	1,188	9		1,197
1923		74	1	494	346			34	5,402	10,867	39,147		56,365	1,054	9		1,063
1924		76	2	497	406			39	5,657	13,369	45,355		65,401	1,122	11		1,133
1925		158	3	459	541			61	5,960	16,650	52,448		76,280	1,226	12		1,238
1926		150	2	478	653			41	5,844	23,314	64,311		94,793	1,188	9		1,197
1927		112	2	504	663			47	5,342	26,368	77,018		110,056	1,267	8		1,275
1928		94	1	512	630			46	5,492	30,773	[G]84,745		122,293	1,842	8		1,850
1929		93		535	704			45	4,988	34,758	[G]99,507		140,630	1,868	20		1,888
1930		157	D	523	1,182			59	4,904	41,624	[G]125,555		174,004	1,996	16		2,012
1931		134	F	520	1,606			124	4,662	49,127	162,842		219,015	2,038	F		2,038
1932		126	F	530	1,608			208	4,116	53,815	154,367		214,770	1,895	F		1,895
1933	11	122	F	562	1,665			204	4,072	54,020	154,840		215,496	1,663	F		1,663
1934	10	178	F	557	2,187			151	3,913	62,063	174,318		243,377	1,546	F		1,546
1935	41	133	F	541	2,996	44		119	3,812	61,310	182,386	2	251,384	1,301	F	4	1,305
1936	273	127	F	503	3,115	50		123	3,789	63,659	186,206	1	257,846	1,278	F	4	1,282
1937	619	123	F	502	3,176	221	16	110	3,716	52,452	193,241	4	254,180	1,196	F	22	1,218
1938	752	130	F	513	3,861	383	318	101	3,763	48,366	204,956	9	263,152	1,581	F	27	1,608
1939	934	120	F	500	4,487	693	1,055	91	3,898	45,996	212,500	9	270,283	4,415	F	27	4,442
1940[H]	1,424	119	F	499	4,544	718	1,755	57	3,891	43,823	215,659	10	272,499	5,159	F	25	5,184
Total	4,064	2,557	20	11,167	50,357	2,109	3,144	2,767	262,795	916,026	4,398,082	35	5,653,123	43,217	143	109	43,469

[A] Included in India, British, prior to 1935. [B] Includes fields in Russian Asia other than Sakhalin. [C] Exclusive of U.S.S.R. fields in Asia, other than Sakhalin, which are included with U.S.S.R. in Europe. [D] Less than 1,000 barrels. [E] Approximate production. [F] No more data available. [G] Year ended September 30. [H] For 1940, figures are preliminary, having been estimated by The Oil Weekly. [I] Beginning of production in Brunei. [J] Production of France in previous years credited to Germany.

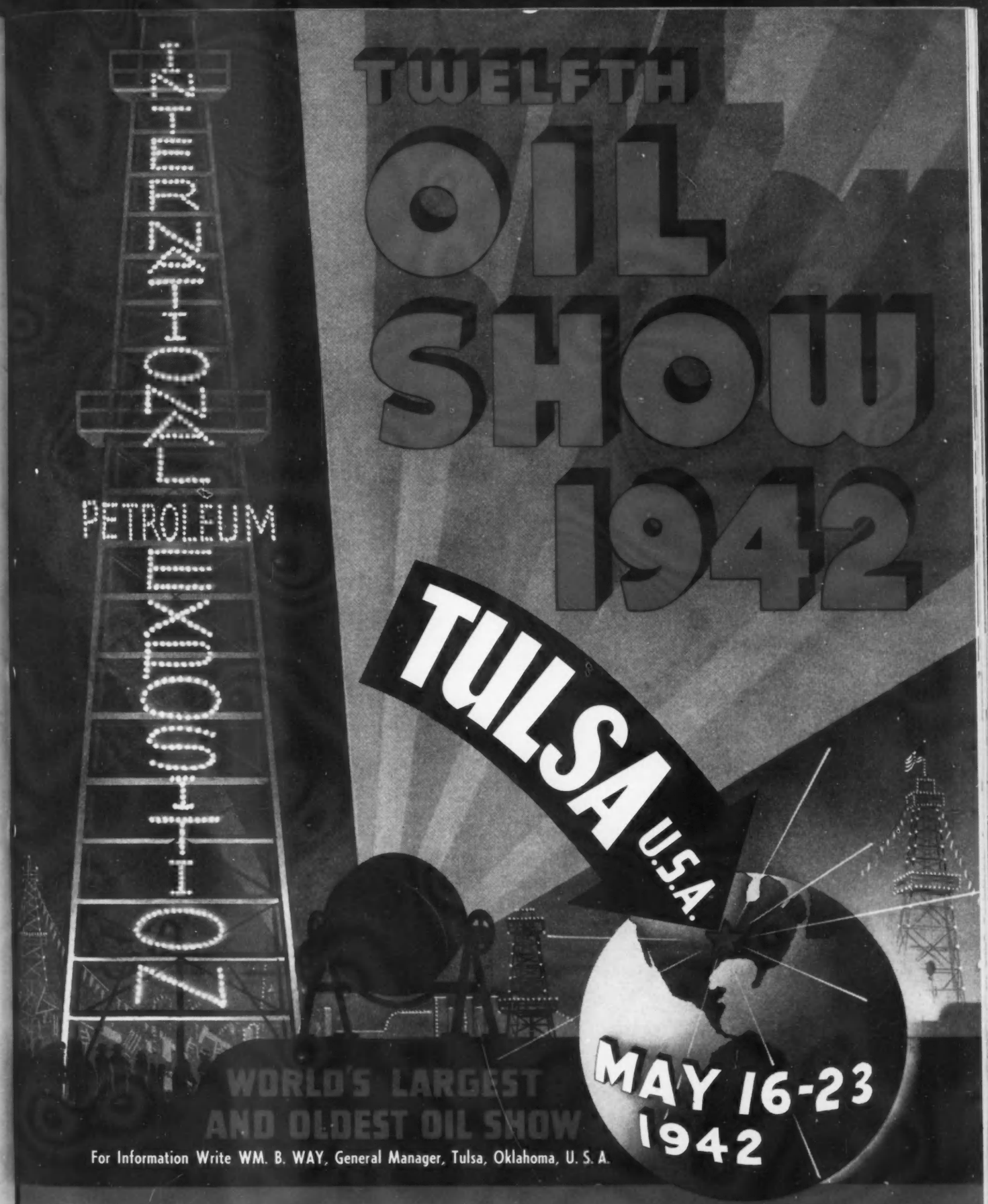
(Continued on Next Page)

WORLD CRUDE OIL PRODUCTION, BY COUNTRIES, BY YEARS

(Complete production history of world, in thousands of barrels of 42 U. S. gallons. Sources—Mineral Resources and Minerals Yearbook, except as otherwise indicated.)

	NORTH AMERICA						SOUTH AMERICA							
YEAR...	Canada	Mexico	Trinidad	United States	Other North America	Total North America	Argentina	Bolivia	Colombia	Ecuador	Peru	Venezuela	Other South America	Total South America
1857	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1858	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1859	.....	.....	.....	2	.....	2	.....	.....	.....	.....	.....	.....	.....	.....
1860	.....	.....	.....	500	.....	500	.....	.....	.....	.....	.....	.....	.....	.....
1861	.....	.....	.....	2,114	.....	2,114	.....	.....	.....	.....	.....	.....	.....	.....
1862	12	.....	.....	3,057	.....	3,069	.....	.....	.....	.....	.....	.....	.....	.....
1863	83	.....	.....	2,611	.....	2,694	.....	.....	.....	.....	.....	.....	.....	.....
1864	90	.....	.....	2,116	.....	2,206	.....	.....	.....	.....	.....	.....	.....	.....
1865	110	.....	.....	2,498	.....	2,608	.....	.....	.....	.....	.....	.....	.....	.....
1866	175	.....	.....	3,598	.....	3,773	.....	.....	.....	.....	.....	.....	.....	.....
1867	190	.....	.....	3,347	.....	3,537	.....	.....	.....	.....	.....	.....	.....	.....
1868	200	.....	.....	3,646	.....	3,846	.....	.....	.....	.....	.....	.....	.....	.....
1869	220	.....	.....	4,215	.....	4,435	.....	.....	.....	.....	.....	.....	.....	.....
1870	250	.....	.....	5,261	.....	5,511	.....	.....	.....	.....	.....	.....	.....	.....
1871	270	.....	.....	5,205	.....	5,475	.....	.....	.....	.....	.....	.....	.....	.....
1872	308	.....	.....	6,293	.....	6,601	.....	.....	.....	.....	.....	.....	.....	.....
1873	365	.....	.....	9,894	.....	10,259	.....	.....	.....	.....	.....	.....	.....	.....
1874	169	.....	.....	10,927	.....	11,096	.....	.....	.....	.....	.....	.....	.....	.....
1875	220	.....	.....	8,788	.....	9,008	.....	.....	.....	.....	.....	.....	.....	.....
1876	312	.....	.....	9,133	.....	9,445	.....	.....	.....	.....	.....	.....	.....	.....
1877	312	.....	.....	13,350	.....	13,662	.....	.....	.....	.....	.....	.....	.....	.....
1878	312	.....	.....	15,397	.....	15,709	.....	.....	.....	.....	.....	.....	.....	.....
1879	575	.....	.....	19,914	.....	20,489	.....	.....	.....	.....	.....	.....	.....	.....
1880	350	.....	.....	26,286	.....	26,636	.....	.....	.....	.....	.....	.....	.....	.....
1881	275	.....	.....	27,661	.....	27,936	.....	.....	.....	.....	.....	.....	.....	.....
1882	275	.....	.....	30,350	.....	30,625	.....	.....	.....	.....	.....	.....	.....	.....
1883	250	.....	.....	23,450	.....	23,700	.....	.....	.....	.....	.....	.....	.....	.....
1884	250	.....	.....	24,218	.....	24,468	.....	.....	.....	.....	.....	.....	.....	.....
1885	250	.....	.....	21,859	.....	22,109	.....	.....	.....	.....	.....	.....	.....	.....
1886	584	.....	.....	28,065	.....	28,649	.....	.....	.....	.....	.....	.....	.....	.....
1887	526	.....	.....	28,283	.....	28,809	.....	.....	.....	.....	.....	.....	.....	.....
1888	695	.....	.....	27,612	.....	28,307	.....	.....	.....	.....	.....	.....	.....	.....
1889	705	.....	.....	35,164	.....	35,869	.....	.....	.....	.....	.....	.....	.....	.....
1890	795	.....	.....	45,824	.....	46,619	.....	.....	.....	.....	.....	.....	.....	.....
1891	755	.....	.....	54,293	.....	55,048	.....	.....	.....	.....	.....	.....	.....	.....
1892	780	.....	.....	50,515	.....	51,295	.....	.....	.....	.....	.....	.....	.....	.....
1893	798	.....	.....	48,431	.....	49,229	.....	.....	.....	.....	.....	.....	.....	.....
1894	829	.....	.....	49,344	.....	50,173	.....	.....	.....	.....	.....	.....	.....	.....
1895	726	.....	.....	52,892	.....	53,618	.....	.....	.....	.....	.....	.....	.....	.....
1896	727	.....	.....	60,960	.....	61,687	.....	.....	.....	.....	47	.....	.....	47
1897	710	.....	.....	60,476	.....	61,186	.....	.....	.....	.....	71	.....	.....	71
1898	758	.....	.....	55,364	.....	56,122	.....	.....	.....	.....	71	.....	.....	71
1899	808	.....	.....	57,071	.....	57,879	.....	.....	.....	.....	89	.....	.....	89
1900	913	.....	.....	63,621	.....	64,534	.....	.....	.....	.....	274	.....	.....	274
1901	757	10	.....	69,389	.....	70,156	.....	.....	.....	.....	275	.....	.....	275
1902	531	40	.....	88,767	.....	89,338	.....	.....	.....	.....	287	.....	.....	287
1903	487	75	.....	100,461	.....	101,023	.....	.....	.....	.....	278	.....	.....	278
1904	553	126	.....	117,081	.....	117,760	.....	.....	.....	.....	290	.....	.....	290
1905	634	251	.....	134,717	.....	135,602	.....	.....	.....	.....	373	.....	.....	373
1906	569	502	.....	126,494	.....	127,565	.....	.....	.....	.....	531	.....	.....	531
1907	789	1,005	.....	166,095	.....	167,889	D	.....	.....	.....	751	.....	.....	751
1908	528	2 '33	D	178,527	.....	182,988	12	.....	.....	.....	945	.....	.....	957
1909	421	2,714	57	183,171	.....	186,363	18	.....	.....	.....	1,411	.....	.....	1,429
1910	316	3,634	143	209,557	.....	213,650	20	.....	.....	.....	1,258	.....	.....	1,278
1911	291	12,553	285	220,449	.....	233,578	13	.....	.....	.....	1,465	.....	.....	1,478
1912	243	16,558	437	222,935	.....	240,173	47	.....	.....	.....	1,752	.....	.....	1,799
1913	228	25,696	504	248,446	.....	274,874	131	.....	.....	.....	2,071	.....	.....	2,202
1914	215	26,235	644	265,763	.....	292,857	276	.....	.....	.....	1,837	.....	.....	2,113
1915	215	32,911	750	281,104	.....	314,980	513	.....	.....	.....	2,579	.....	.....	3,092
1916	198	40,546	929	300,767	.....	342,440	867	.....	.....	.....	2,593	.....	.....	3,460
1917	214	55,293	1,602	335,316	.....	392,425	1,218	.....	.....	57	2,577	120	.....	3,972
1918	305	63,828	2,082	355,928	.....	422,143	1,353	.....	.....	E60	2,527	333	.....	4,273
1919	241	87,073	1,841	378,367	.....	467,522	1,331	.....	.....	E60	2,628	425	.....	4,444
1920	196	157,069	2,083	442,929	.....	602,277	1,651	.....	.....	E60	2,817	457	.....	4,985
1921	188	193,398	2,354	472,183	.....	668,123	2,036	.....	67	E60	3,699	1,433	.....	7,295
1922	179	182,278	2,445	557,531	.....	742,433	2,866	.....	323	E60	5,314	2,201	.....	10,764
1923	170	149,585	3,051	732,407	.....	885,213	3,400	.....	425	87	5,699	4,201	.....	13,812
1924	161	139,678	4,057	713,940	.....	857,836	4,639	.....	445	E100	8,379	9,042	.....	22,605
1925	332	115,515	4,387	763,743	.....	883,977	6,336	.....	1,007	160	9,232	19,687	.....	36,422
1926	364	90,421	4,971	770,874	.....	866,630	7,851	.....	6,444	214	10,762	36,911	.....	62,182
1927	477	64,121	5,380	901,129	.....	971,107	8,630	.....	15,014	537	10,127	63,134	.....	97,442
1928	624	50,151	7,684	901,474	.....	959,933	9,070	.....	19,897	1,084	12,006	105,749	.....	147,806
1929	1,117	44,688	8,716	1,007,323	.....	1,061,844	9,391	D	20,385	1,381	13,422	137,472	.....	182,051
1930	1,522	39,530	9,419	898,011	.....	948,482	9,002	56	20,346	1,553	12,449	136,669	.....	180,075
1931	1,543	33,039	9,744	851,081	.....	895,407	11,709	25	18,237	1,762	10,089	116,613	.....	158,435
1932	1,044	32,805	10,126	785,159	.....	829,134	13,139	44	16,414	1,597	9,899	116,541	.....	157,634
1933	1,145	34,001	9,561	905,656	23	950,386	13,691	112	13,158	1,620	13,257	117,720	.....	159,558
1934	1,417	38,172	10,894	908,065	28	958,576	14,024	159	17,341	1,637	16,314	136,103	.....	185,578
1935	1,447	40,241	11,671	996,596	47	1,050,002	14,297	164	17,598	1,732	17,067	148,254	.....	199,112
1936	1,500	41,028	13,237	1,099,687	62	1,155,514	15,458	105	18,756	1,942	17,593	154,794	.....	208,648
1937	2,944	46,690	15,503	1,279,160	33	1,344,330	16,355	122	20,599	2,161	17,457	186,230	.....	242,924
1938	6,966	38,279	17,737	1,214,355	78	1,277,415	17,076	226	21,582	2,246	15,839	188,174	.....	245,143
1939	7,838	42,779	19,270	1,264,962	84	1,334,933	18,486	215	22,037	2,313	13,508	205,956	.....	262,515
1940[H]	8,718	40,347	20,169	1,351,847	100	1,421,181	20,266	110	25,932	2,515	13,427	186,780	.....	249,030
Total	64,559	1,986,798	201,733	23,805,051	455	26,058,596	225,172	1,338	276,007	24,998	265,336	2,074,999	.....	2,867,850

[A] Included in India, British, prior to 1935. [B] Includes fields in Russian Asia other than Sakhalin. [C] Exclusive of U.S.S.R. fields in Asia, other than Sakhalin, which are included with U.S.S.R. in Europe. [D] Less than 1,000 barrels. [E] Approximate production. [F] No more data available. [G] Year ended September 30. [H] For 1940, figures are preliminary, having been estimated by The Oil Weekly. [I] Beginning of production in Brunei. [J] Production of France in previous years credited to Germany.



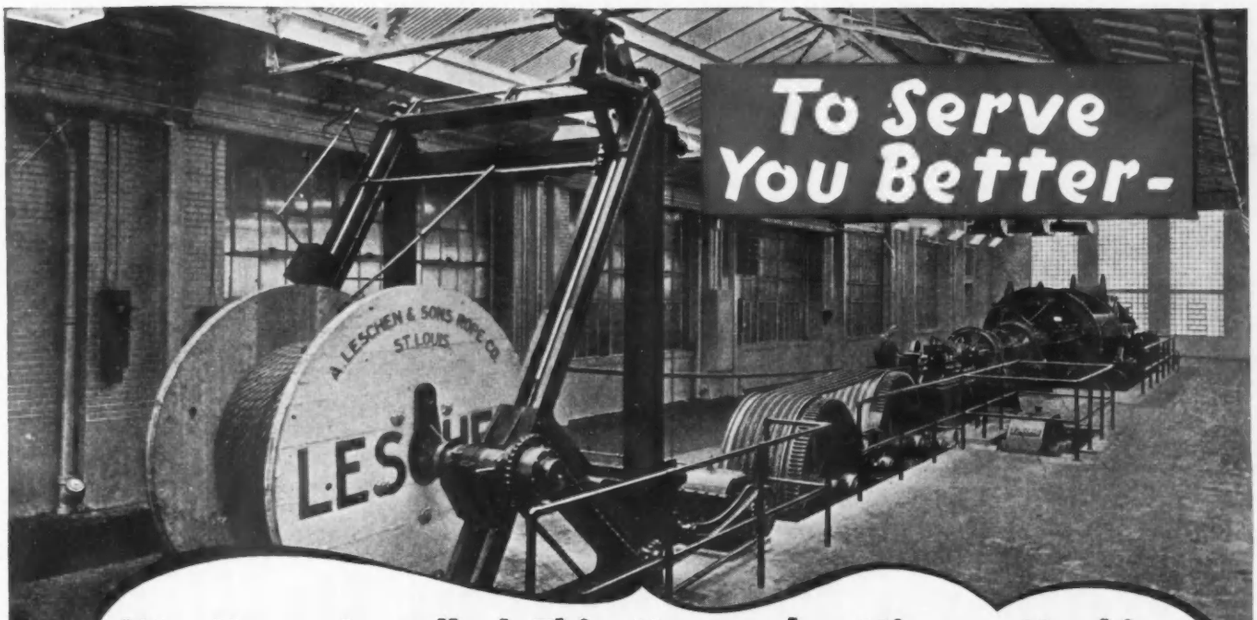
INTERNATIONAL PETROLEUM EXPOSITION

WORLD CRUDE OIL PRODUCTION, BY COUNTRIES, BY YEARS

(Complete production history of world, in thousands of barrels of 42 U. S. gallons. Sources—Mineral Resources and Minerals Yearbook, except as otherwise indicated.)

	ASIA															
YEAR	Bahrein Island	[A]Burma	India, British	Iran (Persia)	Iraq	Japan (Incl. Taiwan)	Netherland India	Sakhalin	Br. Borneo (Sarawak & Brunei)	Saudi Arabia	Other Asia	[C]Total Asia	Australia and New Zealand	World Undistributed	World Total	Percent Pro. by U.S.
1857															2	
1858															4	
1859															6	31
1860															509	98
1861															2,131	99
1862															3,092	99
1863															2,763	94
1864															2,304	92
1865															2,716	92
1866															3,899	92
1867															3,709	90
1868															3,990	91
1869															4,696	90
1870															5,799	91
1871															5,730	91
1872															6,877	92
1873															10,838	91
1874															11,933	92
1875						5						5			9,977	88
1876						7						7			11,051	83
1877						10						10			15,754	85
1878						18						18			18,417	84
1879						23						23			23,601	84
1880						26						26			30,018	88
1881						17						17			31,993	86
1882						15						15			35,704	85
1883						20						20			30,255	78
1884						28						28			35,969	67
1885						30						30			36,765	59
1886						38						38			47,243	59
1887						29						29			47,807	59
1888						37						37			52,165	53
1889			94			53						147			61,507	57
1890			118			52						170			76,633	60
1891			190			53						243			91,100	60
1892			242			69						311			88,739	57
1893			299			106	600					1,005			92,038	53
1894			327			173	688					1,188			89,337	55
1895			372			170	1,216					1,758			103,692	51
1896			430			237	1,427					2,094			114,199	53
1897			546			262	2,552					3,360			121,993	50
1898			542			319	2,964					3,825			124,979	44
1899			941			539	1,796					3,276			131,147	44
1900			1,079			871	2,253					4,203			149,137	43
1901			1,431			1,117	4,014					6,562		20	167,440	41
1902			1,617			996	2,430					5,043		26	181,809	49
1903			2,510			1,209	5,770					9,489		36	194,879	52
1904			3,385			1,219	6,508					11,112		40	217,948	54
1905			4,137			1,347	7,850					13,334		30	215,091	63
1906			4,016			1,564	8,181					13,761		30	213,263	59
1907			4,344			1,718	9,983					16,045		30	263,957	63
1908			5,047			1,871	10,283					17,201		30	285,287	63
1909			6,677			1,887	11,042					19,606		20	298,709	61
1910			6,138			1,829	11,031					18,998		20	327,763	64
1911			6,451			1,737	12,173					20,361		20	344,361	64
1912			7,117			1,659	10,846					19,622		20	352,443	63
1913			7,930	1,857		1,940	11,172		141			23,040		20	385,345	64
1914			7,410	2,910		2,636	11,422		318			24,696		20	407,544	65
1915			8,202	3,616		2,928	11,920		392			27,058		10	432,033	65
1916			8,491	4,477		2,963	12,547		629			29,107		25	457,500	66
1917			8,079	7,147		2,861	13,180		542			31,809		29	502,891	67
1918			8,188	8,623		2,441	12,778		504			32,534		25	503,515	71
1919			8,736	10,139		2,238	15,508		596			37,217		20	555,875	68
1920			8,375	12,230		2,221	17,529		1,020			41,375		20	688,884	64
1921			8,734	16,673		2,233	16,958	2	1,411			46,011		20	766,002	62
1922			8,529	22,247		2,055	17,066	7	2,849			52,753		22	858,898	65
1923			8,406	25,230		1,804	19,870	9	3,940			59,259		24	1,015,736	72
1924			8,416	32,373		1,814	20,473	80	4,163			67,319		24	1,014,318	70
1925			8,274	35,038		1,915	21,422	87	4,257			70,993		23	1,068,933	71
1926			8,011	35,842		1,785	21,243	181	4,942			72,004		17	1,096,823	70
1927			8,032	39,688	338	1,789	27,459	440	4,943			82,689		13	1,262,582	71
1928			8,741	43,461	713	1,944	32,118	677	[I]5,223			92,877		15	1,324,774	68
1929			8,747	42,145	798	2,023	39,279	[G]1,134	5,290			99,416		38	1,485,867	68
1930			8,292	45,828	913	1,950	41,729	[G]1,805	4,907			105,424		40	1,410,037	64
1931			8,200	44,376	830	2,050	35,539	2,734	3,854			97,583		54	1,372,532	62
1932			8,817	49,471	836	1,630	39,001	2,631	3,796			106,182		62	1,309,677	60
1933	31		8,743	54,392	917	1,455	42,606	2,338	4,490			114,972		71	1,442,146	63
1934	285		10,503	57,851	7,689	1,834	46,925	2,881	5,140			133,108		96	1,522,281	60
1935	1,265	7,181	2,038	57,273	27,408	2,249	47,171	2,545	5,546			152,676	5	4	1,654,488	60
1936	4,645	7,588	1,978	62,718	30,406	2,440	50,025	3,212	5,209	20		168,241	5	4	1,791,540	61
1937	7,762	7,848	2,162	77,804	31,836	2,488	56,724	3,656	6,009	65		196,354	4	4	2,039,014	63
1938	8,298	7,538	2,488	78,372	32,643	2,511	57,318	[E]3,821	6,913	495		200,397	4	4	1,987,723	61
1939	7,589	7,396	2,164	78,151	30,791	2,654	61,580	[E]4,000	7,104	3,855		205,284	4	17	2,077,478	61
1940[H]	7,330	7,979	2,250	79,292	25,725	2,639	60,830	[E]4,000	7,048	5,365		202,458	4		2,150,356	..
Total	37,205	45,530	256,986	1,029,224	191,843	82,850	974,999	36,240	101,176	9,800		2,765,853	26	1,043	37,389,960	..

[A] Included in India, British, prior to 1935. [B] Includes fields in Russian Asia other than Sakhalin. [C] Exclusive of U.S.S.R. fields in Asia, other than Sakhalin, which are included with U.S.S.R. in Europe. [D] Less than 1,000 barrels. [E] Approximate production. [F] No more data available. [G] Year ended September 30. [H] For 1940, figures are preliminary, having been estimated by The Oil Weekly. [I] Beginning of production in Brunei. [J] Production of France in previous years credited to Germany.



We Have Installed This Up-to-the-Minute Machine for Making "HERCULES" (Red Strand) WIRE ROPE

Reg. U. S. Pat. Off.

WHILE all wire rope making equipment in our plant is constantly kept at top efficiency . . . while new machines are added from time to time . . . while improved methods are continually being developed, we have installed this giant wire rope "closer" in order to serve you better at this critical time when the words "Quality" and "Service" take on added importance.

This new machine is the result—the culmination — of diligent research and long practical experience in designing, building and operating wire rope making machinery to meet definite and predetermined requirements . . . machinery capable of performing specific operations accurately and efficiently. Its design is such that, automatically, there is precise control of every stage in the closing operation. It is another Leschen example of where nothing is left to chance . . . Our endeavor to serve you better is in keeping with one of the fundamental policies that "Leschen Quality" and "Leschen Service" must continually move forward. In the ever advancing march of progress there is no place to stop and rest upon past accomplishments or past laurels. Because of our strict adherence to this policy, you can always depend on "HERCULES" (Red-Strand) Wire Rope for top-flight performance.

Domestic Distributors

AMERICAN SUPPLY CO.
Kilgore, Texas
CASEY & NEWTON
901 Century Bldg., Pittsburgh, Pa.
GUSTIN-BACON MFG. CO.
Kansas City, Fort Worth, Houston, Tulsa
F. HAMILTON CO.
Bradford, Pennsylvania
HERCULES SUPPLY CO.
Fort Worth, Corpus Christi, Kilgore, Houston
HILLMAN-KELLY, INC.
2441 Hunter St., Los Angeles, Calif.
KIMBELL-BOSTIC SUPPLY CO., INC.
Wichita Falls, Texas
THE B. LEVY ESTATE
Titusville, Pennsylvania
MURRAY-BROOKS HARDWARE CO., LTD.
Houma, New Iberia, Ville Plate, Lake Charles, Louisiana
NADEAU BROTHERS CO.
Cut Bank, Montana
NORTH TEXAS HARDWARE CO., INC.
Vernon, Texas
PARKERSBURG SUPPLY CO.
Parkersburg, W. Virginia
UNION PIPE & SUPPLY CO., INC.
Owensboro, Kentucky
UNITED PIPE & SUPPLY CORP.
Charleston, W. Virginia
UNITED SUPPLY & MFG. CO.
Tulsa, Oklahoma City, Stonewall, Chase, Kans.; Hutchinson, Kans.; Eunice, N. M.; Denver City, Texas; Edna, Texas; Houston, Texas; Sundown, Texas; Odessa, Texas; Pampa, Texas.
WELL MACHINERY & SUPPLY CO., INC.
Fort Worth, Texas
WESTERN MACHINERY CO.
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Socorro, village in Sergipe, is pictured from the derrick of Companhia Itatig's first test. The village church is over three hundred years old.

Below is a view of the test.

Modern Equipment Drilling Interesting Brazil Test

IN THE State of Sergipe, north of Rio in Brazil, Companhia Itatig is drilling a wildcat well near the village of Socorro about 20 miles west of the city of Aracaju.

The well is reported to have been located following a geological survey and the test at Socorro is the second in that vicinity. The first test, drilled near Aracaju suspended drilling at 1500 feet and on the arrival of a new and heavier rig the well at Socorro was spudded around the first of this year. Due to lost returns in a porous formation and to the sticking of pipe, the first well at Socorro was abandoned at 471 feet and the rig skidded for a second test.

The equipment is modern and should have no difficulty in reaching the formations which are hoped to be productive.

The president of Companhia Itatig is San Salvador Prioli of Rio de Janeiro.

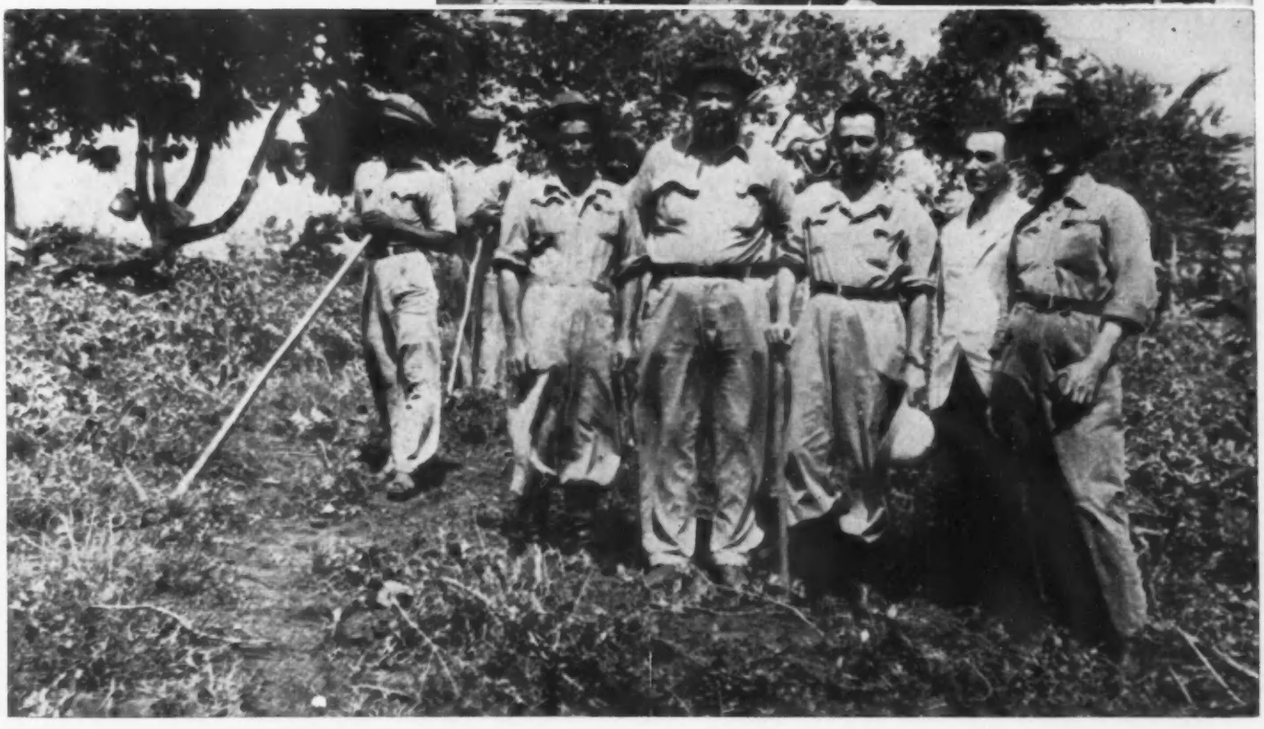
Orlando Prioli, brother of the president, is the director and superintendent, and Edward Robertson is in charge of the work at the well.

Amos L. Harris, a veteran of the oil fields of the Gulf Coast, went to Brazil last year to install the new modern equipment and instruct Brazilian drillers and helpers in its operation. Harris has just returned to the United States.

He says the Brazilian workers proved very apt in learning how to operate the equipment and he is enthusiastic about Brazil.

Socorro is located in a rolling country about 95 to 100 feet above sea level. The hamlet itself embraces about 1,000 population. The temperature compares very favorably with that of South Texas, Harris says.

Three views of Companhia Itatig's Socorro 1 are shown above and at the right. Amos L. Harris, who went to Brazil to set up an American rig and familiarize Brazilian employes of the company in its operation, is shown in the pictures above. In the view at the right are Edward Robertson, superintendent; Orlando Laurito Prioli, director, and Mr. Sobrero, driller. Below, Harris is pictured with the crew of Socorro 1.



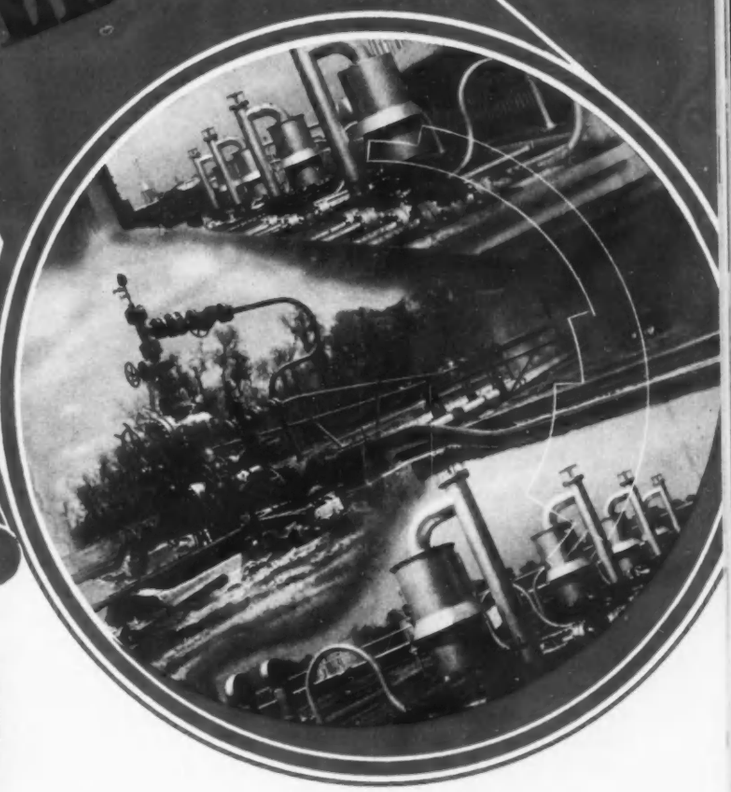
Eight Drilling Rigs at Work In Brazil

ALTHOUGH petroleum studies were conducted in Brazil as early as 1919, there has not been any intensive prolonged exploitation, and it was not until January 23, 1939, that the country's first and thus far only producing field was found. This is the Lobato field, near Salvador, State of Baia, on the coast, where two producing wells have been completed.

Exploitation activity at present is at a peak, with eight rigs in operation. All are located along the coast line, and half of them are at Lobato.

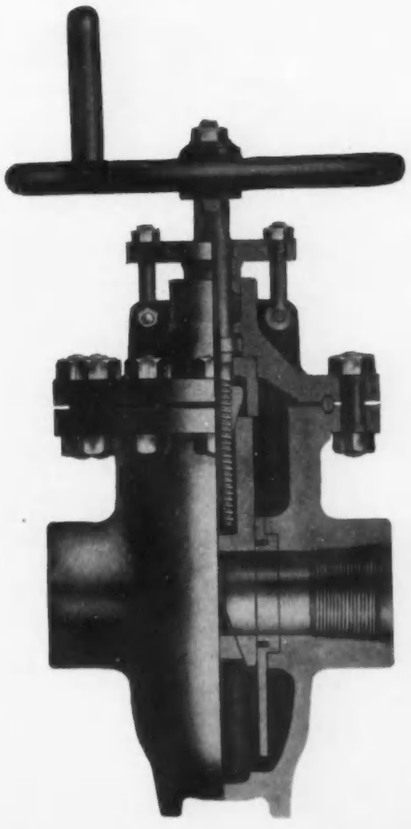
Counselho Nacional do Petroleo has been continuing prospecting efforts, particularly along the coast line in the Baia-Alagoas region. Three tests are reported to have found two distinct producing levels that have possibilities of being of economic value, and work of commercially developing them is under way.

LOOKING AT OLD OCEAN



Commonly Called the World's Most Valuable Oil Field

Here, in the world's deepest major producing field, where drilling is extremely hazardous and the highest of well pressures are encountered, 95% of the wells are controlled with W-K-M Through-Conduit Lubricated Gate Valves. No better testimony of unfailing service could be had than continued repeat orders from the developers of Old Ocean, the world's most valuable oil field!



W-K-M Company, Inc.

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HOUSTON, Texas, U. S. A.

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Practical Operating Hints for

1. FLOOD CONTROL

Application of Hydraulic Flow Principles Minimizes Flood-Water Erosion

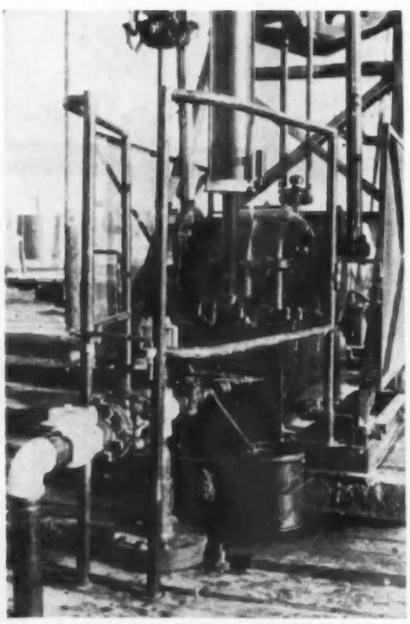
This arrangement minimizes flood-water erosion of dike surrounding pump station.

FLOOD-WATER erosion of the dike surrounding a field pump station may be minimized by the layout of the fire walls, and by taking advantage of basic hydraulic flow principles.

The upstream edge of the dike may be laid down at right angles to stream flow, so that the water banked against the earthwork tends to act as cushion and absorb most, if not all, of the current force before it reaches the dike.

At the corner around which flow occurred, a mattress of twigs, brush and short ends of wire fencing affords anchor to cut down erosion, while staggered or setback sections of the fire wall below this protected nose provides a gradually widened channel and thus acts to slow down the current along these sections.

Actual flood experience demonstrated that the protected nose or deflection point actually encouraged silt deposition against the fire walls farther down stream, and aided in building up natural protection to the dike.



A guard rail around moving parts of this pumping rig protects spectators.

2. SAFETY

Guard Rail Encloses Pumping Rig

A COMPANY operating in California safeguards pumpers and other employes, as well as curious spectators who may be inspecting the well, by installing guard rails around the pumping unit head and polished rod of each well.

Welded from 1½-inch pipe material, the guard is built in two sections which come together a foot or so beyond the stuffing box. The rear upright of each section rests and pivots in a 2-inch nipple approximately six inches long that is welded to a base, and in turn bolted to the supporting base of the unit. At the point where the sections meet around the well head, a U-shaped clip made of sucker-rod material is used as a spacer and to hold the two sides together.

The guards, six feet high, are inexpensive to build, and are easily removed by merely lifting them out of the pivoting sockets. For servicing purposes, only one side is swung aside to get at the stuffing box or certain grease fittings. One of the principal objects of the guard is to prevent anyone from inadvertantly walking between the well and unit and becoming injured by the descending horsehead.

3. FIELD LINES

Welded Joints Given Reinforcement

IN FIELDS where high day and lower night temperatures during the summer cause considerable expansion and contraction of surface pipe lines, certain precautions must be taken to protect welds and

Reinforcement of this surface pipe line prevents breakage at the joint.

joints from breakage or unnatural strain. One operator uses a simple inexpensive means of providing such protection to important welded joints by installing at each joint where the welded angle is as great as 25 to 30 degrees or more, a short length of casing, welded to both sections of pipe across the weld. While this section does not prevent the pipe line from expanding or contracting, it does shift the bending point to other sections along the length of the pipe that are better able to withstand the strain.

4. SERVICING

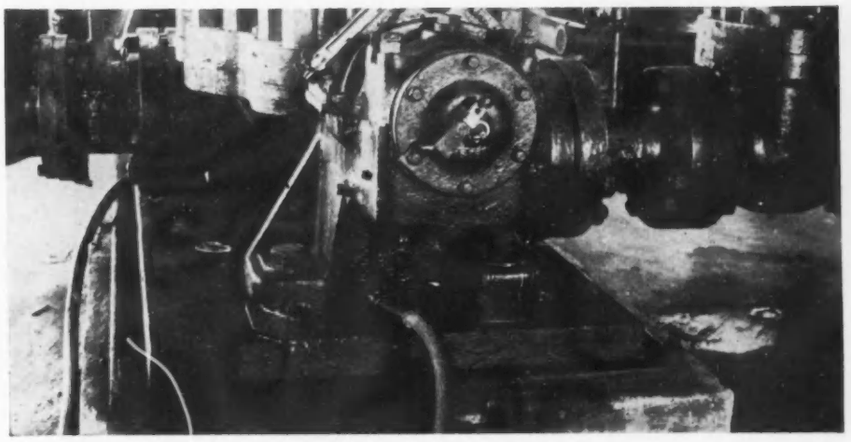
Convenient Anchor for Rod-Pulling Unit

MANY operators are adopting a practice of putting new wells on production with no provision made for pulling rods or tubing except by the use of a portable truck-mounted unit. Provision for tying down or anchoring such portable units is being made by one company at a very small cost. At the time the concrete floor is laid, heavy 1-inch nuts are anchored flush with the floor level at the points tie-downs would be needed. Large 1-inch eye-bolts kept either with each pulling unit or stored at each well then are screwed into the nuts to form a solid anchor for the unit.

Nuts cemented into the floor provide tie-downs for rod-pulling unit.

5. CORROSION CONTROL

Ground Connection Reduces Deterioration Of Impeller From Electrolysis



Grounding brush on shaft combats impeller deterioration caused by electrolysis.

TO COMBAT impeller deterioration attributed to electrolysis on a heavy duty pump handling large quantities at high pressures, one company attached a grounding brush to a bracket on the bearing housing, with the carbon brush sanded to fit the surface of the shaft extension. The brush is carried in a holder similar to that used on small electric generators, with the pigtail wire soldered to the supporting bracket. Current generated, or accumulating on the impeller shaft, prevented from being grounded by the film of lubricating oil in the bearing, is thus drained from the pump to prevent further corrosion.

6. LINE LAYING

Fence Utilized in Hanging Pipe

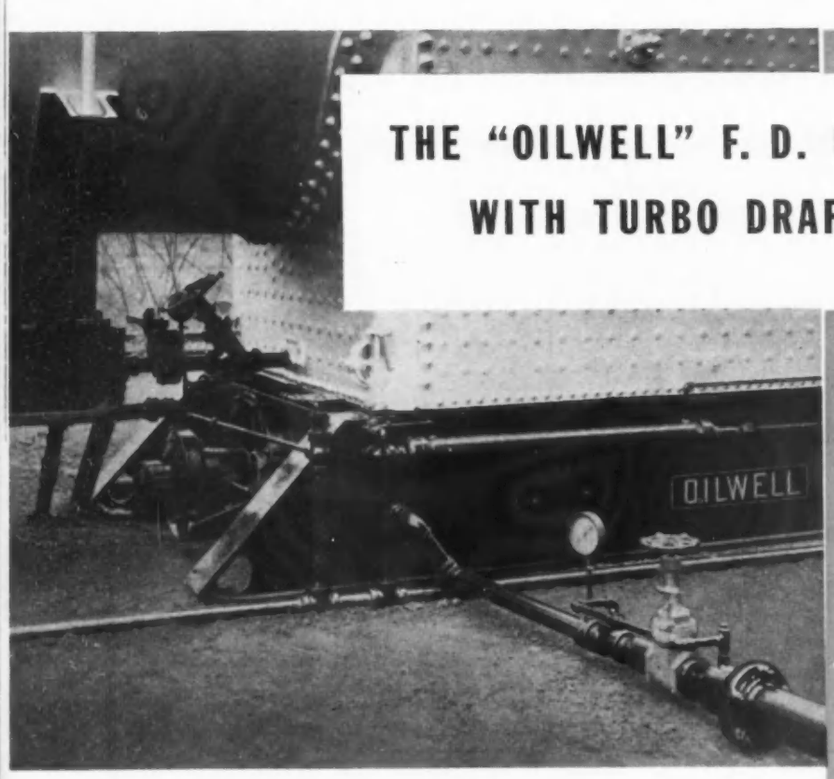
THE problem of laying a 2-inch line as nearly level as possible across rough terrain was solved in an easy manner by the field department of one company.

A wire-line fence strung on steel pipe posts that extended across the lease in the same direction, was utilized to good advantage. Points of equal elevation, or as nearly so as could be determined, were marked off on each post. Short elbows of 2-inch pipe were welded to the posts at these levels. The pipe line, supported on the fence posts, was laid without need for any excavation along the way.

This method of laying a line is particularly adaptable in an area where such lines may be of a temporary nature, and where it is immaterial whether water or fuel in the lines is affected by the temperature extremes of day and night.

This wire-line fence is conveniently utilized to support a two-inch pipe line.

Time-Proved Design



THE "OILWELL" F. D. PORTABLE DUCK'S NEST WITH TURBO DRAFT-FAN AND BURNER

Using the time-proved, forced-draft method of firing, the "Oilwell" F. D. Portable Duck's Nest has repeatedly demonstrated money-saving advantages in the operation of oilfield steam power plants. The unit comprises a refractory-lined, welded, steel frame with built-in, steam-turbine driven draft-fan and burner arrangements for firing with either gas or oil or a combination of both. It can be furnished for locomotive-type oilfield boilers of any size or make.

ADVANTAGES . . .

Increases boiler output. In a furnace of ample volume, fuel and air are thoroughly mixed, causing early and complete combustion with no flames entering the tubes. Positive-pressure (provided by forced-draft) fills the entire firebox with the products of combustion and results in uniform flue-temperature.

Reduces transportation and installation costs. Entirely eliminates the use of stacks.

Saves fuel and water. Uses only a small percentage of the steam required for either a stack jet or a steam atomizer (for oil firing).

NEW INTERCHANGEABLE PARTS AND ACCESSORIES

Keep "Oilwell" and Wilson-Snyder Steam and Power Slush Pumps modern and up-to-date

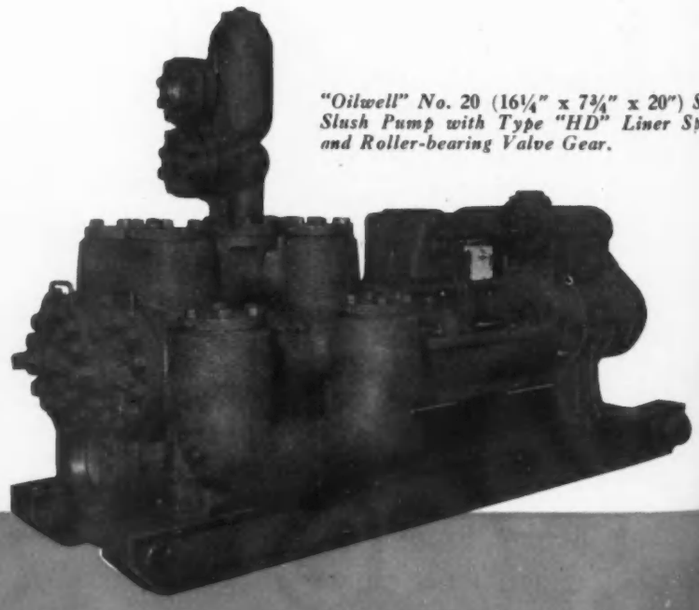
Constructed in accordance with time-proved design principles for oilfield service, "Oilwell" and Wilson-Snyder Slush Pumps *are not* made obsolete by subsequent improvements. As improvements are made they are incorporated in fully interchangeable parts and accessories which can be applied to pumps in service. Send now for information on the following new developments:

- **Type "HD" Roller-Bearing Fluid Liner Spacers**
- **Improved Type "C" Streamlined Valves and Seats**
- **Roller-Bearing Valve Gear (for No. 20 and "Super" Steam Pumps)**

STEAM SLUSH PUMPS

	No. 16	No. 18	No. 20 (two sizes*)	"Super" (two sizes*)
Steam-Cylinder Diameter by Max. Liner Size by Stroke ..(Inches)	12x6 x16	14x7¼ x18	16¼x7¾ x20	16¼x7¾ x20
Number and Size of Suction Openings....	1-6"	3-10"	1-10"	3-10"
Hydraulic Test Pressure, Discharge .....(Lbs./Sq. In.)	2000	3000	4000	4000
Maximum Working Pressure, Discharge .....(Lbs./Sq. In.)	1200	1800	2500	2500
Maximum Steam Pressure..(Lbs./Sq. In.)	300	400	350	350
Normal Operating Speed .....(R.P.M.)	55	50	50	50
Theoretical Displacement at Normal Speeds .....(G.P.M.)	410	622	771	771
Stalling Load at Max. Steam Pressure ....(Pounds)	33,800	61,700	72,600	72,600
Gross Weight: Domestic.....(Pounds)	8,300	14,400	20,300	20,850
Export.....(Pounds)	8,800	15,000	21,200	21,800

**Both the No. 20 and the "Super" Pumps are also available with 15" diameter steam cylinders designed for a maximum working pressure of 400 lbs. per sq. in.*



"Oilwell" No. 20 (16¼" x 7¾" x 20") Steam Slush Pump with Type "HD" Liner Spacers and Roller-bearing Valve Gear.

Principles increase output and reduce operating cost of "OILWELL" Machinery

THE "OILWELL" NO. 64 UNIVERSAL HOISTING UNIT

Simplicity based on time-proved design principles makes this compact and portable hoisting unit outstanding in performance and low-cost operation. Features include:

Two speeds to the rotary and four to the drum.

Instantaneous reversing — steam-rig simplicity of controls.

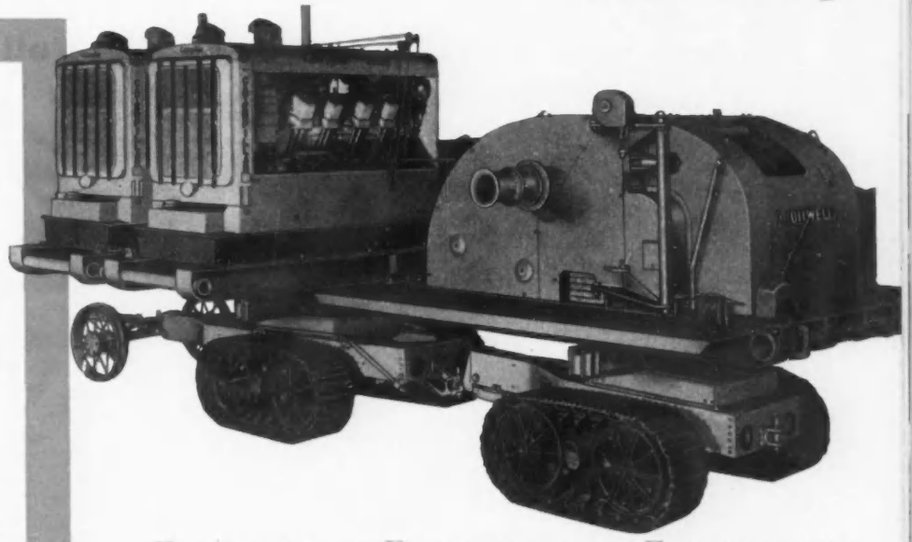
May be driven by either internal-combustion engines or steam and is easily converted in the field. Either one or two internal-combustion engines may be used, with a wide choice as to capacity, fuel and make. When two engines are used, a dual drive permits compound or separate operation.

Extreme flexibility in setting power pump is provided by idler pulley.

Friction-clutch rotary drive facilitates spinning pipe and saves time in making trips.

Roller chains and cut-tooth, heat-treated steel sprockets in sealed oilbath enclosures provide all speed reductions.

All grease lubrication fittings are grouped on a central panel.



Easy to move...Easy to operate...Easy to service

One of several similarly equipped and mounted "Oilwell" No. 64 Universal Hoisting Units recently shipped to a South American oil field. In service, the hoisting unit remains on its wagon mounting. A special derrick substructure permits backing the assembly into place.

SPECIFICATIONS

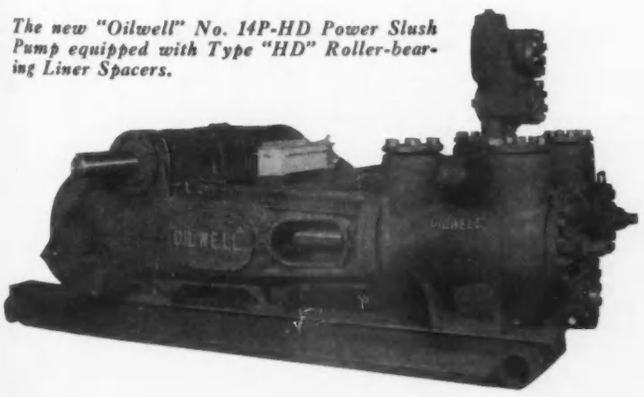
Recommended Max. Drilling Depth: with 4½" Drill Pipe (6 lines)..	(Feet)	5000
Recommended Max. Drilling Depth: with 3½" Drill Pipe (6 lines)..	(Feet)	6000
Drum: Spool Diameter	(Inches)	16
Width between Flanges	(Inches)	26½
Brake Rims, Diameter by Face Width	(Inches)	46x7⅛
Length, Over-all	(Feet)	24
Height, Over-all	(Feet)	6½
Width, Over-all without Catheads	(Feet)	8
Weight, Complete for Internal-Combustion Engine Drive but less Engine and V-belts	(Pounds)	21,850

TWO *New* Power Slush Pumps to meet more severe drilling conditions:

☆ **"OILWELL" NO. 14P-HD (7¼" x 14")**

☆ **WILSON-SNYDER NO. 18-P (7¼" x 18")**

The new "Oilwell" No. 14P-HD Power Slush Pump equipped with Type "HD" Roller-bearing Liner Spacers.



Fully recognizing the increasing severity of operating requirements for power slush pumps, "Oilwell" and Wilson-Snyder have developed, time-proved, and introduced two sturdy new models. The complete line of "Oilwell" and Wilson-Snyder Slush Pumps (listed in the following table) includes a dependable pump of efficient size and ample capacity for every drilling need.

POWER SLUSH PUMPS

		No. 12-P	No. 812-P	No. 16-P	No. 14P-HD	No. 18-P	No. 20-P
Maximum Liner Size by Stroke	(Inches)	5x12	6x12	6x16	7¼x 14	7¼x 18	7¾x 20
Hydraulic Test Pressure, Discharge	(Lbs./Sq. In.)	2000	3000	3000	4000	4000	4500
Maximum Working Pressure, Discharge	(Lbs./Sq. In.)	1200	1800	1800	2500	2500	3000
Maximum Recommended Speed	(R.P.M.)	65	65	60	60	55	55
Maximum Working Pressure with Full-Size Liners at Max. Speed	(Lbs./Sq. In.)	540	520	520	765	765	825
Theoretical Displacement at Maximum Speed	(G.P.M.)	251	364	447	570	673	850
Maximum Recommended Brake Horsepower Input at Max. Speed	(H.P.)	92	129	159	300	353	480
Gross Weight with Short Skids: Domestic	(Pounds)	7500	10290	14785	23600	28700	44416
Export	(Pounds)	7900	10880	15393	24300	29700	45931

OIL WELL SUPPLY COMPANY

EXECUTIVE OFFICE—DALLAS, TEXAS
EXPORT DIVISION OFFICE—
20 ROCKEFELLER PLAZA, NEW YORK CITY

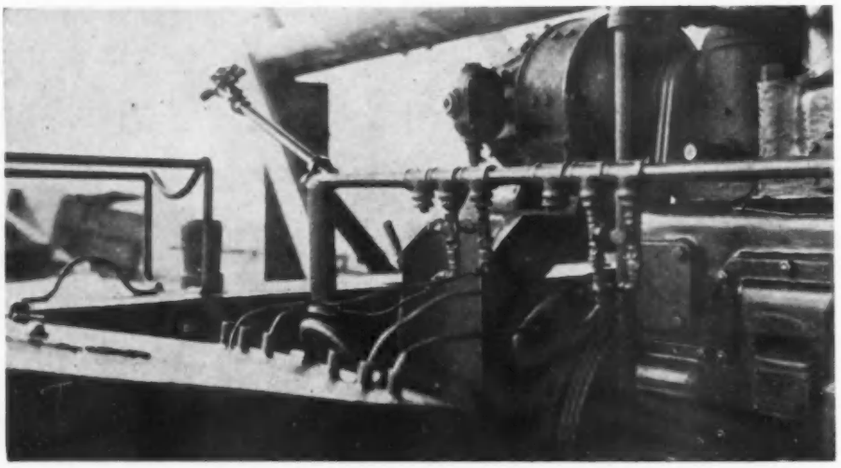
Branch Stores in all Oil Fields
United States Steel Corporation Subsidiary

DIVISION OFFICES—
OIL CITY, PENNA. DALLAS, TEXAS
LOS ANGELES, CALIF.

Practical Operating Hints for

1. LUBRICATION

Chain Sprockets of Speed Reduction Unit Serviced by Supply From Oil Drum



Series of copper tubes brings lubricant to each chain sprocket on reduction unit.

A METHOD of making sure that each individual chain sprocket receives an adequate supply of lubricant at all times on a speed reduction unit on the mud pumps is being used by one Kansas drilling contractor.

A small cradle, just large enough to comfortably accommodate an oil drum in a horizontal position, was constructed of ½-inch pipe and mounted two feet higher than the chain case. A ¾-inch horizontal pipe line containing a number of tees in the center above the chain case was installed. Short lengths of copper tubing leading from each of the tees were extended to short nipples welded over holes directly above each chain sprocket. The lines were supplied with visual drip indicators and adjustable cocks just below the tees.

Maintenance attention was reduced to a minimum following installation of this system, a check on the action of each drip cock and the amount of oil remaining in the drum usually being the only procedure necessary.

Cylindrical bushings give protection to this kelly, facilitating handling.

2. MATERIALS HANDLING

Kelly Protected by Removable Bushings

CAREFUL handling of the kelly is made a simple and easy matter by one company in using cylindrical bushings which, when bolted together around each end of the kelly, allow it to be handled on the rack much as any other length of drill pipe.

Different bushings are required for each kelly size, but they are so easily made that the expenditure is negligible in relation to the resultant protection to the expensive joints. A bushing for a 5-inch kelly consists essentially of an 18-inch length of 10-inch casing, each end of which is partly closed off to form square openings. The section is then cut in half lengthwise, after which two small flanges on the two sides of each end are welded on and fitted with short cap screws. Very little time is consumed in assembling the bushings on each end of the kelly after it is laid down on the walk, and it then can be rolled up on the drill-pipe rack without extra lines or men.

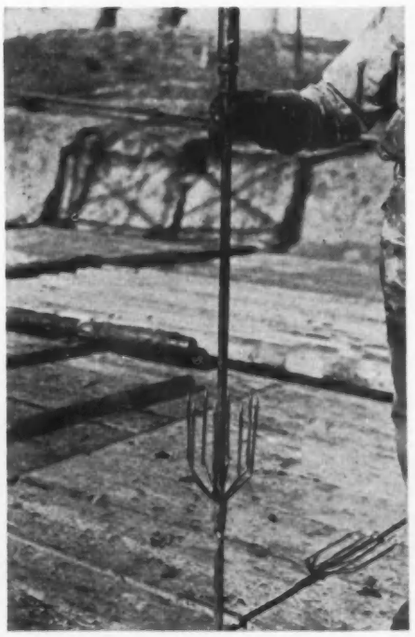
For longer kellys, limberness in handling is partly overcome by spacing one or more such bushings along the length of the joint.

3. GADGETS

Fishing Tool Used On Drilling Plug

A SIMPLE light fishing tool is being used by one operator to make sure each hole is absolutely clean of small objects that might in some manner at some later date become lodged around a bailer, tool or production liner and cause an expensive fishing job.

On drilling out the cement plug, fragments of cement or at times fairly large pieces of the composi-



This fishing tool is used to clean out pieces of cement after drilling out plug.

tion material used in float-shoe construction, and other material too large to be picked up in the bailer, are frequently fished out with the tool.

The tool, built up for just this purpose, consists of a 4-foot length of ¾-inch sucker-rod, pointed at the bottom, and provided 12 inches up from the bottom with a basket-like group of steel fingers spaced closely together in order to hold small objects as the tool is being pulled up the hole. The fingers, cut from lengths of ¼-inch steel welding rod, are approximately nine inches long and are welded at evenly spaced intervals around the sucker-rod. The tops of the fingers are sharpened, but are pointed inward slightly to prevent becoming caught in the small spaces between the ends of the casing joints at each collar as the tool is being drawn upward.

The tool is run in on a light sand line, and is connected to it by a hook made from the pin end of a sucker-rod, which then screws into the box on the top end of the tool. Should the tool become hooked to some object too large for it to bring up, a strain can be applied that will bend the fingers free to bring it out of the hole, after which the drill or standard fishing tool can be run in.

4. MATERIALS HANDLING

Chemicals for Drilling Mud Given Protection

A SMALL wood structure is being used by Harry L. Edwards Drilling Company to house drilling-mud weighting materials and chemicals in localities where large amounts of these materials are used. Relatively large savings are realized on one or two deep wells in prevention of damage and loss to high-priced materials from unfavorable weather.

One side of the house has a door opening to the road, with an opening to the mixing hopper on the other side, permitting easy unloading of material from trucks and mixing through the hopper in any kind of weather.

Foundation consists of three 8x10-inch sills, so built that the house may be easily moved by truck from one location to another. The floor is made of 3x12-inch boards, sufficiently strong to support the heavy materials. Roof is of corrugated sheet iron, and sides of ordinary siding. Dimensions are 20 feet long, eight feet wide and high.—*W. M. Kelly, Bay City, Texas.*

Connection to discharge line of boiler feed-water pump supplies high-pressure hose.

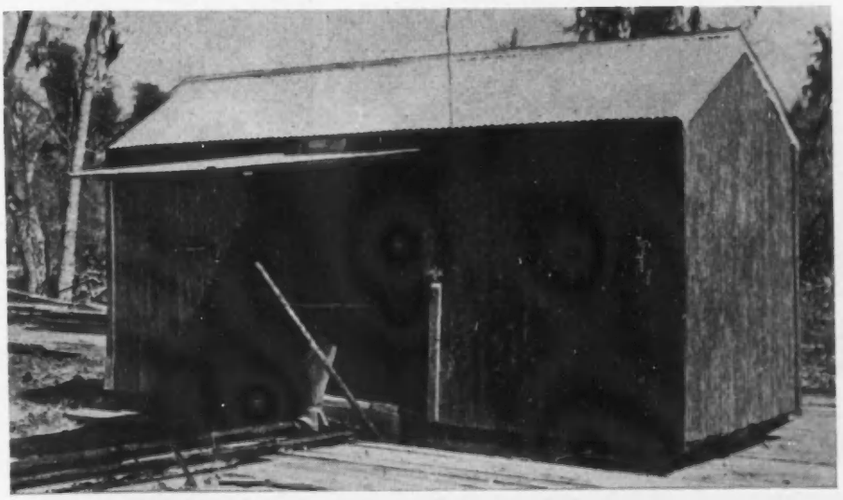
5. CLEAN-UP WORK

Hot Water Available Under Pressure

VERY often around the boiler setting of a wildcat well, the need arises for a high-pressure hose. The boilerman of one company solved this problem by installing a 2-inch tee in the discharge line above one of the spare boiler feed-water pumps, followed by a two-to-one swage and a small gate, into which was screwed an adapter for a 1-inch water hose and nozzle.

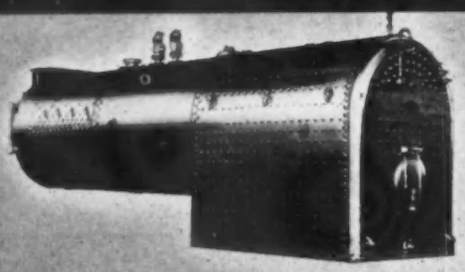
When a high-pressure stream is required to sluice off walk-ways, steps or parts of the equipment that have just been washed down with solvent, the main valve in the feed-water line up-stream from the tee is closed down slightly so a lesser volume of water at higher pressure is forced through the hose.

Very good use, also is made of the high-pressure stream of water when a boiler is cut out of the battery for repairs or overhauling. After the greater part of the remaining heat of the boiler has been dissipated after shutting off the fires, the stream of water can be uesd to wash down accumulations of soot and dust from the flues, stack or firebox, and making it possible, by cooling off the parts, to more quickly perform the necessary work on the boiler.



Easily moved structure protects drilling-mud weighting materials and chemicals.

STEAM OR DIESEL



LUCEY HI-TENSILE STRENGTH OIL COUNTRY BOILERS

150 H.P. 300 and 350 lb. W.P.

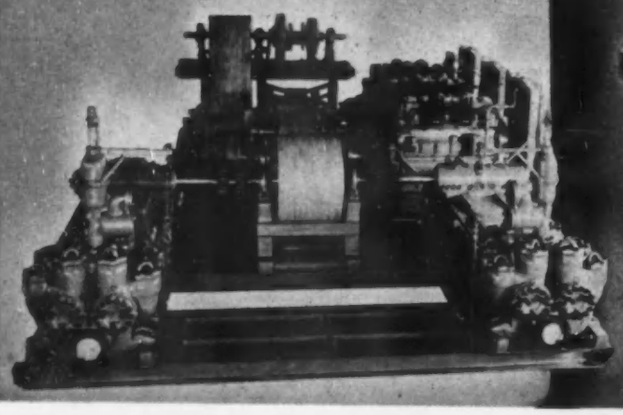
Lightest weight boiler per horse power on the market! Increased fire box dimensions providing 1505 sq. ft. heating surface and furnace volume of 233 cu. ft. Short tubes (13'-6") in vertical rows, thin transfer sheets. Welded fire box with no rivets to overheat or burn. No dome necessary. Space above curved crown sheet of fire box—20".

WHETHER you're using steam, Diesel, gas or gasoline power for your drilling operation, LUCEY can supply you with the proper equipment based on more than 30 years experience in servicing oil operators throughout the world. We have built a great many different types of installations and can furnish the correct equipment either in separate units or combinations of units.

WHELAND-LUCEY

DIESEL ROTARY DRILLING OUTFIT

This three-engine Diesel outfit is designed for high-powered economical drilling to 12,000 feet. Engines are full Diesel of 200 to 300 horse power, mounted on toboggan-type skid bases. Flexible hook-up permits easy changeovers for compounding engines to drive either drawworks or pumps. Pumps are Wheland-Lucey HP-15000-AD 7¾"x18" on ground level with engines. Reverse clutch on substructure at derrick floor level. Entire hook-up arranged for field transportation in sections.



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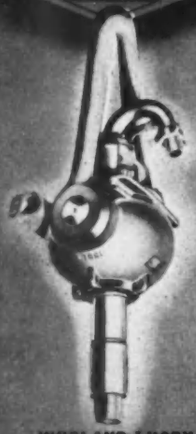


WHELAND-LUCEY

E-7000 OIL BATH SWIVEL

For Drilling to Extreme Depths

Spherical body of manganese vanadium steel for maximum strength, minimum weight. Bearing capacity of 464,350 lb. at 100 R.P.M. Timken True Apex main thrust bearing. No adjustments necessary in field!

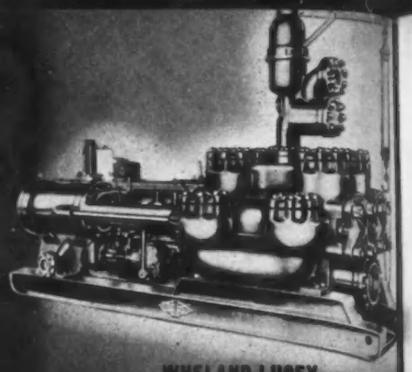
"PITTSBURGH SPECIAL DOUBLE GRIP" ROTARY DRILL PIPE

All the advantages of shoulder welding without any of the disadvantages. Tight fitting shoulder relieves last engaged threads of destructive vibrations and "biting" and seals the joint. Internal upset or external upset — internal flush. Regular A.P.I. thread length permits make up with regular A.P.I. pipe or tool joints.

WHELAND-LUCEY

TRIPLE OIL BATH ROTARIES

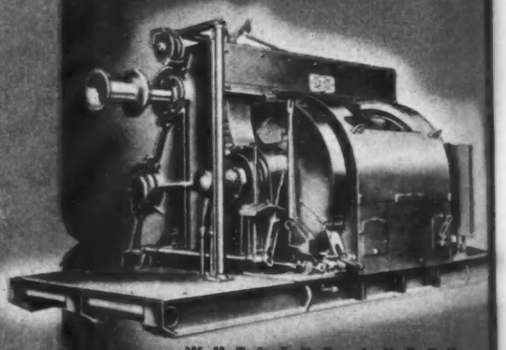
Built in three sizes: 27½", 20½" and 17½". A machine for any size or depth hole. Designed to give increased performance, greater safety and longer life at higher rotating speeds.



WHELAND-LUCEY

20" DUPLEX STEAM — SLUSH PUMP

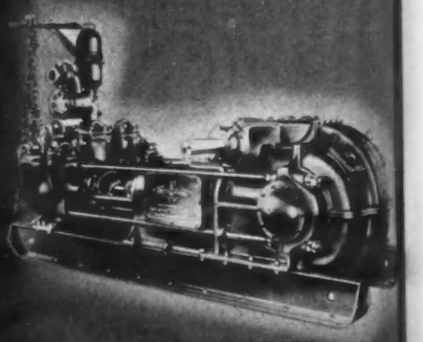
Built in 2 sizes: H-20000-BA 16½" x 8" x 20", H-20000-AA 15½" x 8" x 20". Self-draining steam end. Steam and exhaust valves located below steam cylinders. Improved thermal efficiency, better steam cushion; elimination of broken rings and cylinder heads; more mud and higher mud pressure.



WHELAND-LUCEY

B-3000 DRAWWORKS

For deepest drilling. 4 or 6 drum speeds, 2 rotary speeds. Self-aligning roller bearings throughout. All shafts forged steel — normalized. Water cooled brake flanges and oil tight guards.



WHELAND-LUCEY

POWER SLUSH PUMP HP-15000-AD 7¾" x 18"

For high pressure and deep drilling. Totally enclosed, providing oil bath lubrication for gears, connecting rod and crosshead. Complete shaft assembly with bearings reversible permitting drive from either side. Standard or high pressure fluid end optional.

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Bolivia Dissatisfied With State Oil Operations

MANAGEMENT of the Bolivia State Oil Company under the former pro-Nazi Busch government is now under fire in Bolivia. The company, which took over the properties confiscated from Standard Oil Company of Bolivia a few years ago, has proven to be a losing venture and a drain upon government finances. Now, the former management is being asked to account for a quarter of a million Bolivianos which up to this writing stand unaccounted for.

Recently the Bolivian senate, after a lengthy debate, passed a resolution identifying itself with the government's attempt to bring to an end the impasse in the Standard Oil Company question in such a manner as is compatible with the national honor and at the same time satisfactory to the company.

Bolivia in the past has shown considerable evidence of anti-American feeling — that feeling being directed, by subtle propaganda, against Standard Oil Company. (The peculiar position of the oil company during the Bolivian-Paraguayan war is illustrated by the fact that Bolivia claimed that the company did not help Bolivia as she should, while anti-American interests in Paraguay and Argentina accused the company of fully financing the Bolivian side of the war.)

The Busch government, which was very pro-Nazi, sent a mission to Germany and Italy to arrange a barter deal between those two countries and Bolivia. The plan called for a credit of 20,000,000 reichmarks to be used in buying machinery, pipe and technical aid, which would be paid back by Bolivian shipments of oil and low-grade ore.

The situation in Bolivia may be summed up at this time as:

The pro-Nazi feeling which was fostered by the Busch government among the people of Bolivia is not nearly as strong as it formerly was. The present government realizes the value of financial aid from the

Road leading to Well No. 8 at Camiri, in Bolivia

United States. The United States State Department, under Secretary Hull, has made representations rather forcefully in the past, calling attention to the expropriation of American properties without pay or expressed willingness to pay. The operation of the Bolivian oil properties under the state oil company has resulted in a loss to the country even with the technical aid Bolivia secured from Argentina. At present the state oil company, Yacimientos Petroliferos Fiscales Bolivianos, under a different management than in the Busch regime, is reported not only pressed for funds but the situation actually endangers the economic stability of Bolivi..

The apparent desire to establish more friendly relations with the United States seems to be growing, but it is hampered still by the propaganda efforts of the Nazis, the spearhead of which propaganda in Bolivia is the newspaper La Noche, of La Paz, which is strongly suspected of being financed by German groups. This paper, and one in Buenos Aires provide a "news" service free of charge to most South American papers, although only the smaller papers print what they supply, the service being transmitted by the German Transocean agency. These papers are accusing officials of the Bolivian government of desiring to "betray" their country by granting Standard Oil Company of New Jersey property rights in Bolivia.

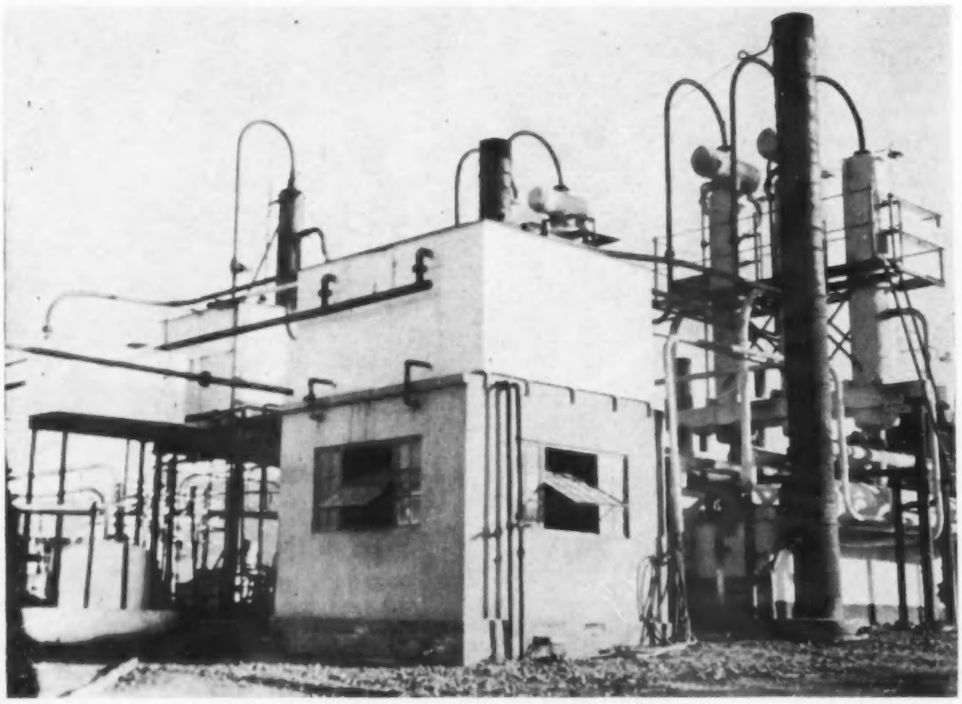
RAUL ZUMELZU
President of Yacimientos Petroliferos Bolivian

From an interview granted by Yacimientos Petroliferos Fiscales Bolivian's president, 40 year old Raul Zumelzu, present at which was also the company's general manager, Arturo J. Machicao, former Standard Oil Company official Zumelzo said that the difficulties which Yacimientos Petroliferos Bolivianos is fighting against are partly due to the Chaco war with its disastrous effects upon the financial structure of the nation. Continuing he said,

"We have tried very hard to improve traffic conditions and to reduce the loss during transport of the oil from the wells to the various centers of consumption. At one time we imported tank trucks from Argentina; but the loss due to evaporation during the transport were up as high as 18 percent as the tanks were not provided with partitions. We shall build a railroad from Sucre to Camiri (480 kilometers, 300 miles) and we hope that the agreement with Argentina will link Sanandita with the Argentine station of Yacuiba. Unfortunately, there are no prospects of exporting oil to Chile which would be an excellent market. There are no transport possibilities. There is still another way open: regulation of the Pilcomayo river, but all this requires enormous investments and large amounts of materials which can only be secured from the United States.

It is reported that plans exist for a modern cracking plant at Oturo, but it is dependent upon a number of things not yet worked out, including the shipment of Bolivian oil into Argentina and thence back over a railroad to a mining center in Bolivia.

Production of Bolivia during 1940 amounted to a total of 287,700 barrels, of which 111,700 barrels came from the Camiri area and 176,000 barrels from Sanandita.



Refinery at Camiri, Bolivia

THIS *PACKER* HAS TAKEN THE LEAD BECAUSE

IT EFFECTIVELY MEETS ALL CONTROL HEAD PACKER REQUIREMENTS

American Control Head Tubing Packer.

- Recent tests in high pressure areas show that this packer will withstand *all* pressures.
- Has more fluid bypass area than area of any other flow packer.
- Easily set and reset at any depth, at will, without damaging rubber.
- Has a non-sticking packing element.
- Sealing pressure is definitely predetermined and not affected by excess tubing weight.
- Control head feature has a positive seal—no valves to leak.
- Small valves in bottom of packer help to flow your well.
- The flowing life of wells can be greatly prolonged by use of this packer, with assurance of no trouble when pulled.
- By combining this packer with American Flow Chamber, your light wells will flow.

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Ancon Oil Field in Ecuador Continues Activities

THE Ancon oil field, located near the Pacific Ocean on the Santa Elena Peninsula in the Province of Guayas, western Ecuador, remains the only producing field of consequence in that republic. Discovered in 1923, the two producing formations have yielded oil in prolific amounts, and the unusual thickness of the sand body in places has kept many of the better wells flowing over a period of several years without an appreciable decline in production.

Anticlinal Structure

The field is a flat-top anticlinal structure marked by considerable surface fracturing and faulting which apparently does not continue with depth. In general, the surface structure is that of Oligocene beds uplifted in the vicinity of the Miocene. The upper formations are quite flat, but the deep Atlanta formation dips steeply on all flanks.

Comprising 12,000 productive acres, the field produces from two horizons. The shallow Socorro sandstone, found at depths ranging from 200 feet to 1300 feet, produces oil at 17° Be. gravity under conditions similar to those found in many of the shallow pumping fields in the United States. By far the more important horizon is the Atlanta sandstone, of a depth from 1200 to 3600 feet. This formation in places is 2500 feet thick, the gravity of its oil is 40° Be.

Water Drive

The Socorro horizon contains little gas, but a marked water drive. The wells in this formation are pumped, and the majority make varying amounts of water. The reservoir energy in the Atlanta is gas, which exists in sufficient quantities to maintain long flowing life for the wells. Rigid enforcement of the conservation laws conserves the gas drive, as wells with a gas/oil ratio of more than 1000 to 1 are shut in. The average ratio of the Atlanta wells is in the vicinity of 500 to 1. Initial production from the Atlanta ranges up to 2000 barrels per day, and the rate of production decline is slow, one of the better wells making 600 barrels after 5 years operation, and producing a total of 2,500,000 barrels during that time. The Socorro wells are less productive, with the average well having an initial potential of 30 to 40 barrels, and settling after 3 or 4 years to 5 barrels per day.

Drilling conditions in the field are unusually tough, with three months required to complete the average well of 3500 feet. An average of 25 to 35 bits per well is required, many being rock bits to penetrate the hard formations. The boulders cause additional difficulty, as they frequently fall from above to wedge the drill pipe in the hole. Wells tend to drill off the vertical, and straightening them is difficult because the formation is usually harder than a cement plug.

Paraffin Deposits

Workover jobs are not frequent, the only work being the regular cleaning of paraffin at nine-month intervals. As only the top 300 feet of the tubing is bothered with paraffin, the operation is a simple one. Sand does not interfere with production as the producing horizons are firm.

At the end of 1939, there were 483 wells producing in the Ancon field. The year was marked by 23 completions, mostly in the Socorro horizon. However, 52 wells in the field were abandoned, 50 being in the Socorro. Slow but steady activity continues in the Atlanta, that horizon accounting for 6 completions. The Atlanta wells continue to be a good investment because of the longevity of their lives.

Ecuador Production and Well Data by Fields

Figures from Department of Mines, Republic of Ecuador

FIELD	Age In Years	Proved Area In Acres	PRODUCTION IN BARRELS			NUMBER OF OIL AND GAS WELLS						
						Completed to End of 1940	During 1940		End of 1940			
			During 1939	During 1940	Total to Dec. 31, 1940		Completed	Abandoned	Closed In	Producing	Flowing	Artificial Lift
Ancon	20	12,000	2,173,555	1,768,797	22,471,986	576	27	1	?	400*	37	400*
Cautico-Achallan	17	2,000*	62,552	71,691	556,385	181	9	99	....	82	2	80
Carolina and Santa Paula	....	2,000	36,017	79,256	613,785	64	9	43	.....	21	2	19
Concecion	10	.....	15,397	52,836	136,598	15	3	1	.....	14	5	9
El Tambo	9	.....	1,222	956	8,816	6	.....	2	....	4	....	4
Tigre	3	200	65,623	400,903	466,526	12	6	.....	....	12	10	2
Total	....	.....	2,534,365	2,374,439	24,264,095	854	54	146	....	533*	56	514*

* Indicates figure is indefinite.

HIGHLIGHTS IN THE WEEK'S NEWS

Legislation

Illinois Bill Provides Limited Oil Conservation

A bill for a three-member commission to regulate Illinois oil drilling, but not to limit production from existing wells, was introduced in that state's senate last week with the endorsement of Governor Dwight H. Greene.

Future drilling would come under jurisdiction of the commission, and the body would be given power to set drilling units up to 20 acres in lime fields, and up to 10 acres in sand pools. Purchasers would be required to "purchase or offer to purchase all the oil legally produced and offered for sale within the field within which such person is producing or purchasing oil, without discrimination in favor of one owner or manager as against another, whose oil is substantially similar in quality and price."

In a statement on the bill, Governor Greene called attention to the state's present output being below market demand as estimated by the United States Bureau of Mines, adding: "It is apparent there is no need of granting power to the state to restrict the production of Illinois oil; accordingly, no power was considered as beneficial for the oil commission to prorate Illinois oil production."

Members of the commission, who would be paid $6000 a year, would be appointed by the governor and could not be financially interested in the oil industry.

Governor Greene characterized the measure as "purely a conservation plan, and not a proration bill." He said he believed the bill would give the commission authority to restrict the number of wells drilled in any particular pool in the future.

"I do not pose as an oil expert," he told his press conference, "but the intent of the administration bill is to conserve oil resources through scientific drilling and spacing methods."

By a 116-to-0 vote, the house passed and sent to the senate a bill requiring drilling offsets on tracts within 500 feet of producing wells. Under its provisions, if the lessee fails to drill an offset within 90 days after receiving notice, he must cancel the lease or pay the lessor "an amount equal to that which he would have paid if the producing well had been located on his leasehold."

Texas Legislature Stalls on Market Demand Measure

The Texas Legislature last week failed to take action on a bill to strengthen the power of the Texas Railroad Commission in allocating production on demand basis. There is some doubt now as to the possibility of a final vote on this bill at this session.

The legislature has indicated that it expects to go home about the first of June. The session closes officially on May 13, but may continue indefinitely, although the legislators'rate of pay drops from $10 to $5 per day. Whether the legislature will adjourn or recess can not yet be determined.

House members have indicated that they prefer a recess, which would permit the legislature to be reassembled at any time by either the speaker of the house or the president of the senate. In other words, the members could call themselves back with or without the sanction of Governor W. Lee O'Daniel.

The senate last week passed a bill which would allow limited use of sweet gas for the manufacture of carbon black. The Texas Railroad Commission would have a discretionary power to determine whether the gas could be used for light and fuel, and in the event there was no market for this purpose, then a permit might be granted to burn sweet gas for carbon black.

New Michigan Bill Would Facilitate Leasing Operations

A bill has been introduced in the Michigan legislature to eliminate the necessity of having all signatures of minority royalty interests to validate a lease.

The bill would authorize a circuit court judge to quit claim title after 30 days when minority royalty owners either could not be located or when they refused to authorize the lease when the majority owners had signed. A minority owner would be permitted, under the bill, to become a partner in the lease under proportionate sharing of costs approved by the court.

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Tankers

War Use of Tankers Calls For Change of Crude Routes

Allocation of 25 American tankers to be diverted by government order to the movement of petroleum to England already is resulting in readjustments in the transporation of oil from the southwest to the Atlantic seaboard and while the effect of the withdrawal of these tankers from domestic trade has not yet put a crimp into the movement of oil to the Atlantic seaboard, it is causing some concern.

One of the effects has been the substitution of pipe lines in the movement of oil to the east. Standard Oil Company of New Jersey, which furnished 4 of the requisitioned tankers, ranging from 70,000 to 80,000 barrels capacity each, is making arrangements to move 12,500 barrels of East Texas crude and 7500 barrels of Louisiana-Arkansas crude via Ajax Pipe Line Company and Illinois Pipe Line Company system to Bayway, New Jersey. This movement will start May 12. Tariff rates have been set at 57 cents a barrel plus 10 cents gathering charge, or a total of 67 cents from well to Bayway.

Route of Movement

Oklahoma Pipe Line Company's system will move the oil from the Arkansas state line to Glenn Pool, Oklahoma, and Ajax Pipe Line Company's carrier will be used from Glenn Pool to Wood River, Illinois, at which point three different routes are available. One route would be via Illinois Pipe Line Company, Buckeye Pipe Line Company, Northern Pipe Line Company, National Transit Company, Tide Water Associated Pipe Line Company, through Lima, Ohio; Cygent, Ohio; Bear Creek, Pennsylvania, and Rixford, Pennsylvania. Another routing would be by Illinois Pipe Line, Southwest Pennsylvania Pipe Line, Eureka Pipe Line, Southern Pipe Line, National Transit, Tuscarora Oil Company, via Negley, Ohio; Cook's Ferry, Pennsylvania; Morgantown, West Virginia; Watson, Pennsylvania; Millway, Pennsylvania; and Centerbridge, Pennsylvania.

How much more oil can be moved through existing pipe line systems east is not definitely known. However, Oklahoma Pipe Line Company's 147 miles of 8-inch from the Arkansas state line to Glenn Pool will be taxed to capacity with Standard Oil Company's 20,000 barrels. Ajax Pipe Line Company from Glenn Pool northward could carry 10,000 additional. There is a possible 50-mile bottle neck from Wood River to Illinois Basin pools (Salem, etc.) and near Cygent, Ohio, and in old Pennsylvania area where lines have been converted into gasoline carriers. Reconditioning and looping in these areas could eliminate the bottleneck. Gulf Refining Company's line has some additional capacity from Oklahoma to Pennsylvania, and Sinclair Refining Company's line through Oklahoma,

Kansas, Missouri and Indiana could be utilized.

Comparative Tariffs

Over a period of years, it has cost only about 25 cents a barrel, on the average, for moving oil from the Gulf Coast to points north of Hatteras. However, since the beginning of the war, tankers have been scarce, and movement by pipe line currently is less prohibitive in relation to shipment by water as tanker rates now range from 50 to 57 cents a barrel, depending on the grade of crude or the product transported. Standard Oil Company of New Jersey's new pipe line tariff rate has been set at 57 cents a barrel. Furthermore, there is no relief from high tanker rates in sight. On the contrary, market observers are looking for increases, in consequence of plans to furnish additional boats for helping to deliver oil to Britain.

Shortage of tankers and the congestion that would result at certain points from increased pipe-line movements to the Eastern seaboard, revived talk of new pipe lines, and it was reported in Washington that one proposal from within the industry called for the building of five 12-inch lines to serve the Atlantic refining centers. In this connection, it was contended that the area uses around 600,000 to 700,000 barrels of crude a day in its refineries, and that the existing pipe-line facilities to the plants amount to only about 70,000 barrels a day at the most, or about one tenth of the total requirements.

Construction of pipe lines for moving oil across the country is advocated as a time-saving proposition, as compared with construction of additional tankers, particularly in view of the congestion at ship-building yards. On the other hand, new pipe lines would require steel, pumps and materials that might not be readily available at this critical time. Also, to be considered is the tanker construction currently underway. Over 25 tankers are due to come off the ways this year, and it may be assumed that brisk building of tankers will continue.

The average daily carrying capacity of the four Standard Oil Company of New Jersey tankers relinquished to the government, if used in continuous service from Baytown, Texas, or Baton Rouge, Louisiana, to Bayway, would amount to 16,000 barrels per day while the movement by pipe line is to be 20,000 barrels daily.

Several other companies with large refineries in the East have depended upon tankers to deliver raw supplies from the Gulf Coast, and probably will have to seek means of moving oil to them, for their tankers no doubt will be requisitioned by the government also. Reports are current that an additional 25 tankers will be requisitioned within 30 days and that by mid-winter another 25 will be needed, a total of 75 American tankers.

Use for Britain

The first reports as to the use to which the tankers would be put indicated that they would be used in moving South American crude to the convoy point (probably Halifax) and thence to England. Apparently the Mediterranean situation is such as to make it necessary for England to shift to another source of supply. (See "Changes in the International Oil Map" Page 37).

In the Southwest the report that the tankers would be diverted from domestic use and transferred to moving South American oil caused concern that it would cause a piling up on the Gulf Coast of oil which will be needed for the Eastern market. This situation is being considered and it is believed that it can be worked out to the satisfaction of those concerned.

Around the first of the year, according to a paper delivered at the A.I.M.E. meeting in New York by Eugene Holman, vice-president of Standard Oil Company of New Jersey, the British existing tonnage was estimated at 8,700,000 deadweight tons, (including British, Norweigan, Dutch, Belgian and Greek), allowing for the sinkings previously reported amounting to 800,000 tons.

American and Panamanian tonnage, on the last occasion when the A.P.I. reported on tanker tonnage, was slightly more than half the combined tonnage shown available to England through her own ownership and that of her allies.

Theoretically, the sinkings which have occured should not put a real problem on the movement of petroleum by America and England. However, the efficiency of tanker movement has been materially affected by the increased distance which English tankers must travel if the Mediterranean is closed or restricted, and the necessity of holding tankers in comparatively long idle periods while waiting for convoy.

An improvement of the latter phase would materially improve the tanker situation.

There is some talk that gasoline might even be moved by pipe line to the Atlantic seaboard, that railroad movements could be stepped up, but of course tanker movement, cheaper than pipe line event at the high rates which have prevailed at times during the past two year, will be called upon to move the bulk of crude and refined products to the East from the refining centers of the Gulf Coast.

There are reported to be 427 American tankers in use. More are coming off the ways. Therefore, while some people are worried, it is believed that the situation can be handled in a satisfactory manner.

Governor Payne Ratner of Kansas is shown signing the Interstate Oil Compact.

Allowables

Kansas Governor Signs Compact Extension

Governor Payne Ratner of Kansas last week signed an agreement to extend the Interstate Oil Compact for two years, recalling that "just a few years ago several of the oil-producing states met in an effort to join together" in the compact.

"This idea has grown, until today nine states representing approximately 80 percent of the total production of crude oil in the United States are members of the compact and will sign the agreement to extend the same," Ratner said. "The effort and accomplishments put forth on the part of the compacting states and the oil industry have greatly assisted the orderly production of crude oil, the prevention of waste and the protection of future reserves of this great natural resource. In my judgment, the compact has also contributed toward enabling the oil industry today, to point with pride to the fact that it is ready to meet any national emergency with adequate reserves and with production and refining facilities flexible enough to respond promptly to emergency needs.

"It is gratifying to know that Kansas has been among the states that have taken the lead in this program and that today she stands ready to do her full share in the defense emergency."

Texas State-Wide Hearing Scheduled for May 19

The Texas Railroad Commission has scheduled its next state-wide proration hearing for May 19. At this hearing, the commission will consider evidence upon which to base its orders for the month of June.

By that time, results should be apparent on a suit brought by Continental Oil Company against the Railroad Commission demanding a right to produce

"THIS REEL OF TIGER BRAND SET A NEW RECORD"

A Tiger Brand Wire Line Engineer reports to his boss . . .

Drove out to the McGordon location this morning, talked to the boys awhile and started to look at a big reel of American Tiger Brand they had out there.

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Bill

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UNITED STATES STEEL

in the Conoco-Driscoll field all the oil which it could market.

A District Court at Austin issued a temporary injunction, permitting the company to produce on the basis of the February allowable, which approximately doubled the amount the commission had assigned to the field for May. Hearing of this case on its merits is set for May 12, and it is entirely probable that the decision will be handed downbefore the state-wide hearing May 19. In the event the commission loses this case, it is possible it will have to revise its method of distributing oil between fields and abandon the formula which was promulgated in the order effective March 1, and has remained in effect since that time.

The commission, however, has another out. Pending before the Texas Legislature is a bill which sponsors contend would permit the commission to do exactly what is provided in the formula currently effective. The bill would defeat the suit by revising the statutes.

While many attorneys are of the opinion that the law in effect now allows the use of the formula as it is applied, nevertheless, with the passage of the bill, legislative intent would be positive on the particular points at issue.

Washington

Five Industry Groups Protest Increase in Gasoline Tax

Protesting against unnecessary restriction of productioin, representatives of five groups in the oil industry on May 9 opposed the treasury's proposal for an increase of one cent per gallon in the gasoline tax.

Views of the industry were placed before the House ways and means committee, holding hearings on the new tax bill, by Fayette B. Dow, representing the American Petroleum Industries committee, the National Petroleum Association and the Western Petroleum Refiners Association; Russell B. Brown, general counsel of the Independent Petroleum Association of America, and J. C. Hunter, president of the Mid-Continent Oil & Gas Association.

Quoting Leon Henderson, administrator of the Office of Price Administration & Civilian Supply, who on May 7 told the committee that the gasoline tax was among a group of levies which he said were "deflationary, unnecessary and highly inequitable," Dow pointed out that the petroleum industry has ample capacity to meet any defense need and so civilian consumption does not compete with the defense program.

More important, he said, the proposed increase in the tax would fall most heavily upon the low income groups, where the great proportion of automobiles are owned, and used for transportation between home and work where mass transportation facilities are inadequate.

At the present time, federal and state taxes on gasoline represent 47 percent of the retail charge. He declared. Under the increase, this would run to as much as 55 percent.

Dow pointed out that gasoline no longer is a luxury but, rather a necessity of persons in all walks of life. Approximately 70 percent of all the cars in the country are owned by persons with incomes not exceeding $40 a week, and only 12.4 percent are owned by persons with weekly incomes of more than $60.

Calling the committee's attention to the fact that both Henderson and Mariner S. Eccles, chairman of the board of governors of the Federal Reserve System, had said the tax on gasoline would make no significant contribution to the defense effort, Brown said the additional tax inevitably would restrict consumption.

Want Probe of Western Hemisphere Aid to Axis

A Congressional investigation of the extent to which the Axis powers are obtaining oil products and other war materials from the Western Hemisphere is sought in resolutions introduced May 5 by Senator Guy M. Gillette and Representative John M. Coffee.

The move for an investigation followed the appearance before members of the Senate foreign relations committee, during hearings on the lease-lend bill, of witnesses who disclosed that there was a considerable movement of oil from the Western Hemisphere to the Axis countries.

The two resolutions, which are identical, call for creation of a joint committee of five senators and five congressmen to make the investigation, the results of which are to be reported "at the earliest practicable time," together with recommendations for such legislation as may be deemed necessary.

The inquiry would go into "the extent to which, the sources from which, the manner in which, and the mediums through which, the so-called Axis powers are obtaining or have obtained essential war materials" in this hemisphere.

Discussing the testimony before the foreign relations committee, Gillette declared it showed that "motor fuel from the South American properties of American companies was reaching Germany and Italy by tankers through shipments consigned to the ports of the Canary Islands.

While the European members of the Axis are being supplied from Latin American sources, Japan is attempting to build up stocks of oil secured direct from the United States.

Department of Commerce export statistics show that 1,553,000 barrels of petroleum products were shipped to Japan in March, following 1,279,000 barrels in February and 1,491,000 barrels in January.

The question of further restrictions on exports to Japan was before the State Department last week, but Secretary Cordell Hull announced that if any embargoes were laid they would be imposed on commodities rather than be directed at any particular countries.

There were indications in Washington that the Administration would be reluctant to cut off Japan's supplies of oil from this country entirely, in the belief that to do so might precipitate a drive to get the Dutch East Indies oil fields. There is an impression that so long as Japan can get oil for her military needs here, she will not bring the East Indies issue to a head.

Japan is seen as not yet ready to undertake to fight Britain and perhaps the United States by attempting to seize the Dutch possessions so long as England continues to trade blow for blow with Germany and the issue of the war remains in doubt.

Financial

Oil Company Securities Are in Good Demand

Oil company shares lately have been in relatively good demand in the markets for securities, and their merits have been pointed out by various brokerage firms. Factors so mentioned have included the improved and improving prices of crude oil and refined products, the better inventory situation of the industry, prospects for further betterment of earnings, the relatively high exemption of the industry from excess profits taxes, and the classification of oil in the ground as a hedge against inflation.

Earnings in the last three quarters of 1941 are expected to compare favorably with those in the corresponding periods of 1940, despite the fact that the initial quarter did not show up well in such a comparison.

First Quarter Earnings

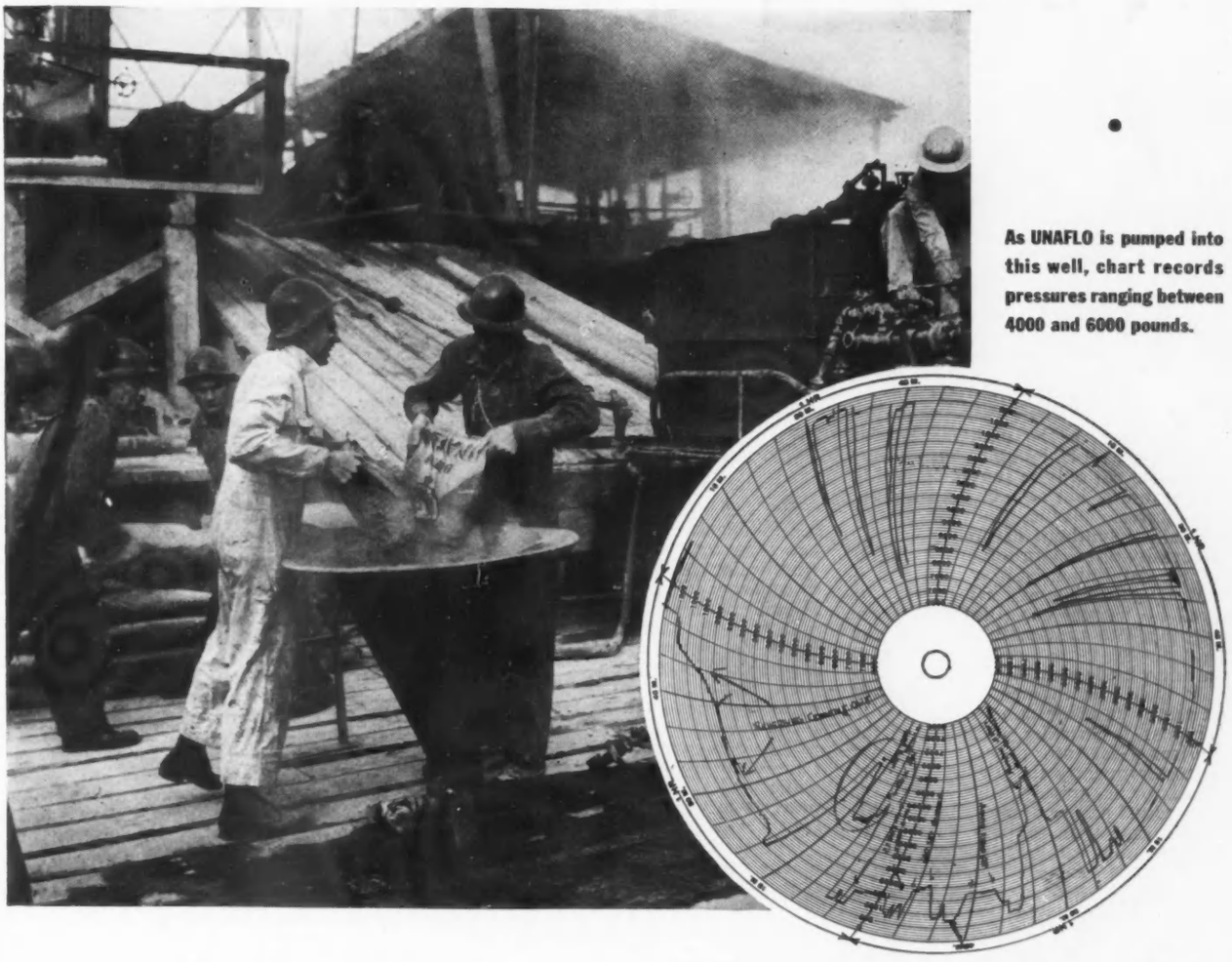
Net income of 13 leading oil companies in the March quarter of this year aggregated $27,723,863, compared with $36,482,883 in the first quarter of 1940, a decrease of 24 percent, according to a tabulation compiled by Carl H. Pforzheimer & Company. That firm explained that the decline reflected primarily the unsatisfactory gasoline price structure which prevailed during the period as well as comparison with the unusually good first quarter last year. Nevertheless, some of the companies made a better showing than was expected, and 6 of the 13 reported increases over last year: namely, Barnsdall Oil Company, Phillips Petroleum Company, Skelly Oil Company, Standard Oil Company of California, Texas Pacific Coal & Oil Company, and Union Oil Company of California.

The current situation is better, however, than the first quarter results might indicate, according to the Pforzheimer survey. Larger than anticipated increases in demand for petroleum products has resulted in a steadily improving statistical position and generally rising prices for crude oil, gasoline, and other refined products. Indications are, therefore, that second-quarter oil-company earnings this year will show a substantial increase over the first quarter and make a considerably more favorable comparison with last year, when second and subsequent quarter profits were adversely affected by the downward trend of gasoline prices.

The indicated increase of approximately 10 percent in motor fuel demand to date this year, according to the report, is one of the largest year-to-year gains recorded in this product's almost uninterrupted record of annual increases. Because of unprecedented gasoline consumption and adjustment of refinery yields, the oil industry has avoided the larger than seasonal accumulation of inventories which occurred during the 1939-1940 winter. Consequently, motor fuel stocks at their seasonal peak in March this year totaled 99,727,000 barrels, or approximately 4,000,000 barrels under the all-time high established in April, 1940.

Withdrawals from gasoline storage commenced earlier this year and at a more rapid rate than in 1940, the report stated, and the spread under a year ago has increased further.

"WE DON'T LEAD WITH OUR CHINS AT 10,000 FEET!



As UNAFLO is pumped into this well, chart records pressures ranging between 4000 and 6000 pounds.

. . . *that's why* **UNAFLO** *went into this string!"*

"YOU can never tell what'll happen to a squeeze job," reports an oil man down in Louisiana. "On this one we were working with salt water sand at 10,091 feet. 100 sacks of UNAFLO in the tubing, and bottom hole temperature 230 degrees!"

"Just look at that chart—we squeezed out 67 sacks, breaking down the formation with 5100 lbs. pressure and then pumped in the cement under pressures from four to six thousand pounds.

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UNIVERSAL ATLAS OIL WELL CEMENTS

National Defense Stressed During Natural Gas Convention

THE Natural Gas Section of American Gas Association, in convention at Dallas, last week, stressed the need for unity and cooperation in defense effort, and considered many technical and commercial papers.

In opening the three-day meet, H. D. Hancock, chairman, acknowledged the welcome by D. A. Hulcy, president of Lone Star Gas Company, Dallas. Hancock compared the present time, and the present position of the natural gas industry to other times, and pointed out that since the last meeting, the natural gas industry has been called upon to carry its load in the national defense program. This it is doing, he assured the convention, not only in supplying fuel to manufacturers, but also in manufacture of explosives, plastics and other vital materials of synthetic nature.

Necessity of preparation has strengthened the determination to serve, he indicated, by affording another part to be played by natural gas. Precautions are being taken to protect the industry, he affirmed, and with up-to-date information being made available the gas industry is well able to meet any demands that might be made upon it.

Thomas J. Strickler, president of the American Gas Association, pointed out that too frequently the public is not informed, or is grossly misinformed, as to the actual nature of an industry. This was the case with the gas industry in past years, but a more complete appreciation of the value of public acceptance prompted a change that has been beneficial. He stressed that anyone or any firm deliberately violating good public relations is actually a liability to the gas industry, and a reflection on all industry. Public opinion has lost none of its strength, and it is chiefly up to local sources to see that the gas industry is correctly judged as an efficient enterprise.

The tremendous changes that have recently been forced upon our thoughts by events abroad were discussed by John Temple Graves, editor, Birmingham Age-Herald, who held that of all problems facing us today, the number one problem of all for all of us is the "man with the little black mustache." a traditional system of socially inspired To us of this country, Graves credited competition, based upon faith, as the logical approach to desires, ambitions and dreams. They were contrasted to the contrary actions of Hitler who has violated more property rights, regimented more labor and enslaved more people, killed more business and fostered more hate, than can be conceived.

The American system, with its freedom from political and economic pressure is democracy. It has served us well in the past, he affirmed, and it is now up to us to recognize and defend this system. It is not enough merely to recognize an existing threat, it must be seen and the fact appreciated that our number one problem is in the person of Hitler.

General sessions and committee reports detailed industrial activity since the last meeting of the section. J. French Robinson, Julian L. Foster, E. L. Rawlins, H. Carl Wolf, F. M. Rosenkrans, L. L. Dyer, R. E. Hull and W. H. Adams were presiding officers. Conferences covered accounting, accident prevention, residential gas sales, industrial and commercial gas sales, production, transmission and general subjects.

Abstracts of papers follow:

Experience in the Texas Panhandle and Hugoton Fields with Shooting and Acidizing Gas Wells

By JOHN M. HANLEY,
Northern Natural Gas Company

Since the advent of acid use in treating Panhandle gas wells about six years ago, the art has progressed rapidly. Application of the principle has spread to adjacent areas, one of which is the Hugoton area of southwest Kansas.

In both the Panhandle and the Hugoton fields, results of acidizing have been favorable. While some of the wells had been shot before application of acid, many had not, and general practice is to us the acid alone. The technique of acidizing is constantly being improved. One recent aid has been use of a hydrostatic load rather than an oil load. This practice is gaining favor among operators.

The technique of shooting wells as a means of effectively accomplishing the objective of increased productivity is also constantly being improved. Better tamping, large diameter shells and the more extensive use of solidified explosives, are cases in point.

Shooting and Acidizing of Gas Wells In Ohio

By J. J. SCHMIDT,
East Ohio Gas Company

While the technique on acid treatment of wells in various parts of the oil country has progressed steadily in recent years, this means of increasing a well's productivity has not been applied widely in Ohio. This has been due to the fact that the materials comprising the pay formations of the strata of the state are largely non-calcareous, and hence not subject to acid treatment.

One exception concerns the Newburg sand. Recently, a new field opened for gas production near Cleveland, was extensively acidized. Of 21 wells treated, 19 were acidized and two were shot with nitro. Acid charges ranged from 500 to 3000 gallons, with the average being about 1250 gallons. A before and after test of gas volumes showed that the treatment raised the average productivity from 607,000 feet to 1,670,000 feet, a gain of 175 percent. The two wells shot with nitro also obtained a marked increase in volumes, rising from 494,000 to 1,198,000 feet, or a gain of 143 percent.

Acid treatments of older wells in the Newburg zone showed relative increases in Medina and Wayne counties. Some of these wells were 25 years old, but even so, responded to treatment.

Completion of Gas Wells Through Producing Pay to Obtain Data

By J. G. DICKINSON,
Texoma Natural Gas Company

Careful checks of wells and fields in arriving at methods of obtaining reasonably accurate data on gas reserves has indicated that the pressure decline method is of questionable reliability. This information, with additional data derived from other independent principles, is of value. To provide another means of supplying pertinent knowledge to the question, some operators have resorted to a practice of measuring the gas volumes after each five-foot drilling interval.

When the gas pay is topped, as in the Permian lime production of the Texas Panhandle, a gauge is made of the well. Following each five feet of drilling thereafter, another gauge is made, so that when the well is completed, a volume-depth chart is available.

It is believed that the expense involved in obtaining this information will be repaid many times over in the value of the data acquired. In addition, there is pertinent information here for aid in repair work, plugging off operations, shooting, acidizing and setting liners. Specifically applicable to cable-tool wells, the method is proving desirable.

Cathodic Protection As a Possible Means for Preventing Corrosion of Gas Well Casing

By WM. E. HUDDLESTON,
Cities Serice Gas Company

With certain limitations, cathodic protection may provide an economical means of combating corrosion on gas well casing.

Of the many problems arising out of such application, however, the most serious is the source of power. Other problems arise in determining the necessary load requirements for a given string of casing; the fabrication of a suitable, low-resistance anode in locations having adverse soil conditions, and the problem of applying cathodic protection to a corroding well in sufficient time to save the string from penetration.

In view of results obtained by insulating, it is apparent that casing corrosion can materially be mitigated by this means alone, so that the life of a string may be extended a few years, or in some cases doubled. This is, of course, provided that the protection is applied early in the history of cathodic penetration.

Multiple wells connected to the same gathering system demand special consideration, as cathodic action on any one part will be accelerated if protection measures are applied to another section. This is a normal action, and is to be expected on compounded systems. The action will be in proportion

CALIFORNIA

Oil and oranges, side by side. International U-6 Power Unit operating a well in the East Coyote field near Placentia, Calif. The U-6 develops 41 h.p. at 1,500 r.p.m.

TEXAS

Typical power unit installation in the West Texas-New Mexico Permian Basin near Odessa, Texas. International U-4 shown. Develops 31.5 h.p. at 1,800 r.p.m.

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See the International Industrial Power dealer or Company-owned branch in your locality. Ask for a demonstration.

BRAZIL

International U-2 Power Unit at work in Brazil's Labato field, on the outskirts of Salvador, capital of Bahai. The U-2 develops 22 h.p. at 1,800 r.p.m.

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INTERNATIONAL Industrial Power

to the degree to which the previously existing system has been thrown out of balance with the application of localized protection.

What's Happening in the Gas Engine Field

By Manley H. Clark,
Southern Counties Gas Company of California

There has been a marked increase in application of natural gas power in industrial uses. To this advance, certain items are specifically responsible. The moderate - speed industrial - type engine has been perfected to a point of efficiency and dependability. The carburetor, long a troublesome unit, has been redesigned and improved. Life of cylinders and pistons have been materially lengthened, and automatic devices have made operation a routine affair.

Improvements in methods of utilizing waste has increased economies of operation, particularly in some applications. In past years, recovery at temperatures above 212° F. was of questionable utility. Improvements here have been notable, for as the thermal efficiency of these engines is fixed, overall efficiency has to be correspondingly high. Cooling by evaporation at temperatures above 212° has been another advance influencing greater applicability of this power.

As a third function, development of better methods of refrigeration with absorption processes are an important and potentially great market of power loads.

Electric System to Prevent Electrolysis At Compressor Stations

By Paul F. Marx,
Northern Natural Gas Company

Electrolysis of piping and other metal equipment at compressor plants is an evil long known. This action is some 50 times as strong in the location of such a plant as it is out "along the line." This is fact, and the necessity of alleviation of the condition if possible, prompted an effort to uncover the cause of this excessive measure of destruction.

Investigation developed the battery-ignition system to be the chief cause, and the system itself to be the carrier. Direct current seeking a return circuit was found when checks were made of yard piping, the ground, steel structures and even girders in main buildings.

Insulation of the primary side of the ignition system is the solution to the problem. This insulation must be thorough, complete. Actuating parts in interrupters must be insulated. One means used has been to tip the steel fingers with tough insulating material, as on the lay shaft breakers. Ignition coils must be insulated. Any trips, or automatic devices must be protected so that current can neither escape nor return. In some cases the job is an easy one, while in others special insulators or washers must be substituted for metals ordinarily used.

Gas Pipe Line Flow Calculator

By C. F. deMey,
Columia Engineering Corporation

In this age of speed and brevity, it becomes necessary to give thought to a new means of calculating gas volumes. This method is analyzed as being a slide-rule method. The formula is a shortcut developed from experience with capacity calculations using Weymouth's flow formula. The latter, although proven and used for years in the industry, does not lend itself to slide-rule application. A developed set of tables must be used as reference in computing by the Weymouth formula, and these cannot be interpreted on a slide rule.

In the devised calculator, two pressure factors enter directly into the calculator setup. In addition, other features permit the solution of practically every type of problem involving the computation of gas pipe-line capacity.

Elements of the calculator consist of a chart and a reading mechanism.

While the majority of the problems involving the computation of gas pipeline capacity have been described and their solution indicated, there are no doubt other uses which may be found for the calculator. For example, in checking pressures or flow through existing systems and detecting unusual conditions, the calculator's flexibility and rapidity may prove valuable.

Lubrication

By B. L. Rogers,
Lone Star Gas Company

The subject of lubrication has been steadily acquiring more data. Common uses have extended knowledge of the problems of lubrication, and specific uses have shown many of the old customs and thoughts to have been in error.

In contrast to past years, the experienced lubrication engineer of today concludes a piston has received too much lubricant when rings are stuck upon removal. Common lubricant systems, as those used at compressor stations, present individual problems. Many of these have been solved by unit filters, reclamation of oil, and systematically regulated pressures through feed lines.

Effect of Compressibility Factor on Horsepower Requirements in High Compression

By C. L. Moore,
El Paso Natural Gas Company

From a detailed study of test data and other information from various sources pertaining to the subject, it was decided to divide the study into two parts: effect upon horsepower requirements, and effect upon compressor performance.

It has been determined that as compression of a gas approaches and passes the critical pressure, the volume is reduced and the density increased to a greater extent than the laws of perfect gases would indicate. At pressures still higher, these relationships reverse themselves. It is in this range that the effects of compressibility are of prime importance.

Through a study of theories and data, it is shown that considerable additional information is necessary before it is possible to offer suggestions as to the mechanism of design. So far, in the opinion of the investigator, work has lacked direction and coordination. Past work has definitely proven the value of taking the compressibility factor into consideration, and with additional knowledge, operations and equipment can include proven data as to this factor in design and operating functions.

Report on Liquefaction, Storage and Regasification of Natural Gas

By John A. Clark,
Hope Natural Gas Company

The attempt to utilize a liquefaction-gasification plant for storage was the outcome of the necessity for excessive storage to supply an equally excessive demand for a very few days. To solve this problem, engineers entertained the thought of reducing the natural gas to its liquid state, for in this physical form it would occupy only 1/600 the space required when in the gas state. Laboratory experiments were made on liquid nitrogen and different insulating materials to protect liquefied gases at 300° F. below zero.

Following completion of this work a pilot plant was constructed capable of handling 300,000 feet of gas per day, and which could store about 1,000,000 feet in the liquid phase. This unit was successfully operated six months, and it was concluded that this time proved the original idea to be sound. Consequently, a larger plant was constructed at Cleveland.

To liquefy the gas, a stage system was resorted to whereby the temperatures were progressively reduced. First reduction was by an ammonia-condensing circuit, the second was by an ethylene-condensing circuit, and the last stage utilized a natural gas-condensing circuit. First, all traces of carbon dioxide and water vapor were removed by using an amine solution as an absorption medium. Total capacity of the plant was 4,000,000 feet per day; horsepower required was 3250.

On February 19, a cold wave produced a heavy demand, and of 15,000,000 feet liquefied, some 7,000,000 feet were regasified with an additional 4,000,000 feet the next day. At a later date, another 21,000,000 feet was required and this justified construction of the plant.

The company feels the plant operated successfully its first year, and that it justified the investment. However, it was pointed out that this type of "liquid-loading" is not the cure-all for peak demands, and that each case is individual.

Welded Pipe Headers and Their Reinforcement

By Eric R. Seabloom,
Crane Research Laboratory

While welded piping has been in general use in oil and gas transmission and in refinery systems for years, headers have presented a peculiar problem. In some instances, headers designed and fabricated to withstand internal loads well within the ability of the pipe have faulted and ruptured without indicating a particular weakness.

On some headers built for testing purposes, capable of withstanding bursting pressures to 3118 pounds, the theoretical limit, ruptures tore the piping at 1200 pounds. This is an observed 60 percent reduction in strength as calculated from formula.

A number of specially constructed headers, designed to alleviate in so far as practical this observed weakness, were tested and their inherent design and strength features analyzed. As a result of a number of tests and rupture data, it was observed that any nozzle or header leg scarfed in such a manner as to permit complete welding through to the inside diameter of the nozzle or header should be satisfactory. The exact type of nozzle attachment to be preferred depends upon the fabrication equipment available, cost of preparation, setup, welding and other production problems.

Refinery Runs Set Record; Inventories Satisfactory

A sharp stepping up of refinery runs, to a new all-time high, featured the latest statistics of the industry, covering the week ended May 3. Production of gasoline only partially reflected the heavy crude runs, however, and output of that product was not quite as great as in the previous week. Consumption of gasoline continued relatively large, meanwhile, as evidenced by the fact th over 300,000 barrels came out of storage to supplement the current production in meeting demand.

Market requirements for heavy fuel oil remained large, and the industry took more than 300,000 barrels of that product out of the storage tanks, although largely in California. Stocks then were 8,000,000 barrels (8 percent) smaller than a year ago for the country as a whole, although inventories east of California remained larger than a year ago.

Seasonal Stock Additions

The seasonal building up of stocks of light fuel oil continued, about 800,000 barrels having been added to storage. The light fuels currently on hand total 30,309,000 barrels, being 5,000,000 barrels (20 percent) in excess of the supply held at this time last year.

Crude oil production temporarily was materially under market demand, because of the shut-down system in Texas, although the nation's production for both April and May will average out close to market requirements for domestic crude.

Crude runs to stills averaged 3,735,000 barrels daily in the week of May 3, a new record. The plants were processing 60,000 barrels a day more than in the preceding week and about 150,000 barrels (4½ percent) more than the daily average of April and May last year. The new record compared with the previous peak of 3,705,000 barrels daily of two weeks previously and with 3,690,000 barrels, the next highest figure, set in June of last year.

Gasoline Stocks Off

Stocks of all gasoline came down in the week of May 3 from 96,647,000 to 96,328,000 barrels, and the latter figure was 7,000,000 barrels (6.8 percent) under the total of 103,389,000 barrels for the corresponding date last year. The inventory of aviation gasoline at the close of the week totaled 7,091,000 barrels, or approximately 2,000,000 barrels more than a year previously; while that of ordinary gasoline amounted to 89,237,000 barrels, which was 9,000,000 barrels (9.2 percent) less than the stocks of 98,189,000 barrels held at this time last year.

The decrease in gasoline stocks from a year ago reflects primarily the reductions on the East Coast (nearly 3,000,000 barrels), in the Appalachian region (about 1,000,000 barrels), and in California (about 2,500,000 barrels). Stocks on the Texas Gulf Coast are 320,000 barrels smaller than a year ago, but those on the Louisiana Gulf Coast are 473,000 barrels greater. Larger inventories are on hand now than a year ago in the Middle West, the Mid-Continent except North Louisiana-Arkansas, and the Rocky Mountain states.

Stocks of heavy fuel oil at 94,414,000 barrels compare with 102,490,000 barrels on hand a year ago. However, the reduction within the past year has occurred almost wholly in California, inventories in most other districts of the country being approximately the same as a year ago or larger. For the whole country east of California the present stocks are, in fact, approximately 3,000,000 barrels larger than a year ago, important additions having occurred on the East Coast (800,000 barrels), on the Texas Gulf Coast (1,000,000 barrels), and on the Louisiana Gulf Coast (1,000,000 barrels), while gains are shown also for the Mid-West, Oklahoma-Kansas, and North Louisiana-Arkansas. In California, the stocks of residual fuel oil are down almost 11,000,000 barrels.

The 5,000,000-barrel increase in light fuel oil stocks since this time last year reflects additions of 2,000,000 barrels on the East Coast, 2,000,000 barrels on the Texas Gulf Coast, 300,000 on the Louisiana Gulf Coast, nearly 300,000 in Oklahoma-Kansas, and over 500,000 barrels in California. There have been small increases also in the interior of Texas and in North Louisiana and Arkansas. Stocks are smaller than a year ago only in the Appalachian region, in the Middle West and in the Rocky Mountain area.

Product Prices Higher; Michigan Crude Raised

The steady improvement of the industry's markets has continued, further advances having been made in prices of most products and of crude oil in Michigan.

Gasoline continues particularly strong, and prices moved up ⅛-cent a gallon last week in the Mid-Continent and Middle Western refining districts and ¼-cent a gallon on the Gulf Coast, while previous gains were easily retained on the Atlantic seaboard. In Western Pennsylvania, gasoline was scarce, and some refiners were asking ¼-cent a gallon more than previously.

In the Mid-Continent, there was continued trading among refiners in gasoline, as some plant owners sought supplemental supplies from others to fulfill contract obligations.

Shipments of gasoline against contracts were reported heavy in the Chicago area, and quotations of refiners and resellers were up ⅛-cent a gallon in numerous instances.

On the Atlantic Coast, demand for gasoline was strong, and higher prices were indicated to be ahead, in consequence of the increasing scarcity of tanker facilities, brought about by the international situation.

However, at the middle of the week, no further increases had occurred in the rates for chartering tankers for moving

Trends of Operations and Changes in Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1938:						
November 12	3,243,250	3,180,000	273,394,000	[6]67,551,000	34,175,000	120,491,000
December 10	3,245,100	3,150,000	[2]269,509,000	68,687,000	32,068,000	118,711,000
1939:						
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
August 5	[1]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[5]1,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[2]3,650,000	[3]229,127,000	72,122,000	39,358,000	115,060,000
1940:						
January 27	3,611,600	3,470,000	237,339,000	87,914,000	27,407,000	103,015,000
February 24	3,732,100	3,490,000	240,836,000	96,719,000	25,390,000	103,419,000
March 30	3,841,250	3,585,000	250,561,000	101,370,000	23,778,000	105,081,000
April 20	3,858,550	3,535,000	254,881,000	[1]102,817,000	24,779,000	103,323,000
April 27	3,845,250	3,555,000	256,670,000	102,452,000	24,997,000	102,552,000
May 25	3,835,650	3,580,000	259,330,000	100,297,000	28,356,000	104,015,000
June 22	3,846,450	[2]3,690,000	260,891,000	97,276,000	32,751,000	104,683,000
June 29	3,639,550	3,625,000	262,059,000	95,142,000	33,590,000	104,486,000
July 27	3,690,400	3,555,000	262,579,000	90,173,000	38,984,000	105,924,000
August 31	3,501,350	3,575,000	265,865,000	85,393,000	44,766,000	108,774,000
September 28	3,799,950	3,600,000	263,609,000	82,273,000	47,986,000	108,450,000
October 26	3,640,300	3,565,000	262,746,000	80,891,000	[4]48,893,000	108,475,000
November 9	3,584,200	3,510,000	261,631,000	[6]79,847,000	48,408,000	107,687,000
November 30	3,335,050	3,510,000	262,679,000	80,284,000	46,212,000	106,618 000
December 28	3,385,500	3,585,000	261,552,000	83,274,000	42,266,000	102,620,000
1941:						
January 25	3,599,100	3,625,000	260,093,000	88,762,000	39,039,000	100,297,000
February 22	3,629,650	3,590,000	261,783,000	95,812,000	34,381,000	98,631,000
March 1	3,632,250	3,585,000	263,176,000	96,917,000	33,725,000	97,510,000
March 29	3,746,550	3,625,000	266,187,000	[3]99,727,000	29,949,000	96,152,000
April 5	3,514,300	3,600,000	265,540,000	99,112,000	28,824,000	95,371,000
April 12	3,603,650	3,630,000	265,160,000	98,654,000	28,381,000	95,471,000
April 19	3,752,650	3,705,000	265,471,000	97,899,000	28,410,000	95,636,000
April 26	3,726,850	3,675,000	266,149,000	96,647,000	29,543,000	94,732,000
May 3, 1941	3,507,100	[1]3,735,000	.....	96,328,000	30,309,000	94,414,000
May 3, 1940	3,679,050	[8]3,578,000	[4]256,670,000	103,389,000	25,294,000	102,490,000
Change in past year	—4.7%	+4.4%	+3.7%	—6.8%	+19.8%	—7.9%

[1] All time peak. [2] Peak for year. [3] Lowest since April, 1922. [4] Stocks, April 27, 1940.
[5] Lowest since October, 1922, due to shut down of six mid-continent states. [6] Lowest for year.
[7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California.
[8] April-May, 1940, daily average.

Wholesale Prices of Refined Products in Principal Markets

	Range Last Week (Cents a gal.)		Changes from Week Before	
REFINED GASOLINE				
Oklahoma Refineries:				
60 Octane and under	4⅜	4¾	+⅛	...
63-66 Octane	4¾	5	...	...
72-74 Octane	5⅛	5⅜	+⅛	...
Mid-Western Tank Car:				
60 Octane and under	4⅜	4¾	+⅛	...
63-66 Octane	4¾	5	+⅛	+⅛
72-74 Octane	5⅛	5⅜	+⅛	...
New York Harbor:				
68-70 Octane	7	7	...	...
72-74 Octane	7	7½	...	...
Gulf Coast:				
60 Octane unleaded	5	5	...	...
65 Octane unleaded	5¼	5¼	+¼	...
72-74 Octane leaded	5¾	6	+½	+¼
NATURAL GASOLINE				
Grade 26-70:				
F.O.B. Group 3	3¼	3¼	...	...
F.O.B. Breckenr'ge, Tex.	3	3	...	...
KEROSENE				
Oklahoma Refineries:				
41-43 water white	4¼	4½	+¼	...
42-44 water white	4⅜	4⅝	+⅛	...
Mid-Western Tank Car:				
41-43 water white	4¼	4½	+¼	...
42-44 water white	4⅜	4⅝	+⅛	...
New York Harbor	5⅛	5⅛	...	...
RANGE OIL				
At Oklahoma Refineries	3⅞	4⅛	...	...
In Mid-Western Market Group 3, basis	3⅞	3⅞	...	...
LIGHT FUEL OILS				
Oklahoma Refineries:				
No. 1 straw	3⅜	3¾	...	...
No. 3	3¼	3⅜	...	...
Mid-Western Tank Car:				
No. 1 white	3⅜	4	...	...
No. 3	3¼	3⅜	...	...
New York Harbor:				
No. 1	5⅛	5⅛	...	...
No. 3	4⅞	4⅞	...	...

	Range Last Week (Per Bbl)		Changes from Week Before	
HEAVY FUELS				
Oklahoma Refineries:				
No. 6	$0.70	$0.70	...	...
Mid-Western Tank Car:				
No. 5	.75	.85	...	...
No. 6	.70	.75	...	...
New York Harbor:				
No. 5	1.55	1.65	...	...
No. 6	1.25	1.35	...	...
BUNKER C FUEL OIL				
(Per barrel, ships' bunkers)				
Gulf Coast	$ .85	$ .90	.	...
New York Harbor	1.25	1.35	—.10	...
DIESEL OIL				
(Per barrel, ships' bunkers)				
Gulf Coast	$1.45	$1.50	...	...
New York Harbor	1.95	1.95	...	...
Los Angeles Basin, 27 gravity	1.20	1.25	...	...
LUBRICATING OIL				
(Cents a gal.)				
Oklahoma Refineries:				
Bright Stock, 150-160 viscosity at 210°, 10-25 pour test	15	15½	+1	...
Neutral oil, pale No. 3 color, 150 viscosity at 100°, 0-10 pour test	9	10¼	+1	...
Western Pennsylvania:				
Bright Stock, 145-155 viscosity at 210°, 25 pour test	17	18	...	+1
Neutral Oil No. 3 color, 150 viscosity at 70°, 25 pour test	25	25	+2	+2

oil from the Gulf Coast to the Atlantic seaboard. Rates last paid for clean boats were reported at 50 cents a barrel for gasoline, 53 cents for kerosene, and 57 cents for No. 2 fuel oil. Rates for dirty boats remained unchanged, likewise, at 50 cents for 30-gravity or lighter crude, and 57 cents for 10-20-gravity fuel oil.

Tankers May Go Up

Although the tanker rates are relatively high, they are around 20 cents under the highs reached in the recent past, and upward movement from present levels would not be at all surprising following the action of the Maritime Commission in requisitioning tonnage for Britain.

Kerosene was in good demand last week, and minimum quotations of Mid-Continent and Middle Western refiners were ⅛-cent a gallon higher than a week previously.

Light fuel oils remained generally unchanged in price, as seasonal building up of stocks proceeded. Market requirements for heating oil next fall and winter are expected to justify any inventories likely to be on hand at that time, and supplies moved meanwhile to the Atlantic coast doubtless will meet with ready demand, inasmuch as difficulty may be encountered in obtaining shipping facilities during the next heating season.

Heavy fuel oils are in good demand, as heretofore, and prices are steady. Although stocks in California are materially lower than a year ago, the decrease there is welcomed; and in the remainder of the country, inventories

Production Up But Within Demand

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (May)	State Allowable (Barrels Daily in May)	BARRELS DAILY FOR WEEK ENDED May 3	May 10
TEXAS—				
Texas Panhandle	.....	.....	80,800	82,800
North Texas	.....	.....	99,700	99,500
West Central Texas	.....	.....	30,500	29,600
West Texas	.....	.....	211,800	249,400
East Central Texas	.....	.....	76,200	79,200
East Texas Field	.....	.....	376,400	374,200
South Texas	.....	.....	177,600	210,300
Texas Gulf Coast	.....	.....	235,700	276,100
Total Texas	1,382,200	1,367,619*	1,288,700	1,401,100
CALIFORNIA—				
Long Beach	.....	.....	41,100	41,600
Midway-Sunset	.....	.....	43,400	54,400
Kettleman Hills	.....	.....	38,100	37,600
Wilmington	.....	.....	82,200	84,300
Others	.....	.....	389,700	419,600
Total California	598,100	571,000†	594,500	637,500
OKLAHOMA—				
Oklahoma City	.....	.....	80,950	91,950
Seminole Area	.....	.....	108,500	109,825
Others	.....	.....	224,450	210,675
Total Oklahoma	440,000	400,000	413,900	412,450
ILLINOIS—				
Salem	.....	.....	97,100	95,700
Louden	.....	.....	69,300	61,200
Centralia	.....	.....	10,750	11,000
Other New Pools	.....	.....	136,200	141,500
Old Pools	.....	.....	13,500	12,500
Total Illinois	336,100	.....	324,850	321,900

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (May)	State Allowable (Barrels Daily in May)	BARRELS DAILY FOR WEEK ENDED May 3	May 10
LOUISIANA—				
North Louisiana	.....	.....	70,000	73,100
South Louisiana	.....	.....	236,800	239,300
Total Louisiana	320,300	320,324	307,500	312,400
KANSAS	213,900	217,900	209,100	196,850
NEW MEXICO	113,900	114,000	109,100	112,700
EASTERN STATES—				
Pennsylvania Grade	49,100	.....	72,100	73,700
Others, Eastern	53,200	.....	19,500	19,100
Total Eastern States	102,300	.....	91,600	92,800
MOUNTAIN STATES—				
Wyoming	90,900	.....	79,800	77,500
Montana	21,300	.....	19,300	19,200
Colorado	5,200	.....	3,800	3,800
Total Mountain States	117,400	.....	102,900	100,500
MICHIGAN	40,000	36,000‡	37,000	37,800
INDIANA	23,900	.....	21,500	21,600
ARKANSAS	83,900	76,673	71,800	76,200
MISSISSIPPI	22,900	.....	27,500	28,900
NEBRASKA	4,800	.....	4,350	4,200
§Total 8 Prorated States	3,192,300	3,103,516	3,031,600	3,187,000
Total United States	3,799,700	.....	3,604,300	3,756,900

* Texas State Railroad Commission's estimate of actual net daily production allowing for usual under-production of 3½ percent under net allowable, which at the beginning of May is calculated at 1,417,222 barrels daily. However, allowable normally increases as new wells are completed. Under May order, most Texas fields were ordered shut down May 3, 4, 10, 11, 17, 18, 24, 25 and 31. Texas Panhandle was ordered shut down May 10, 17, 24 and 31.

† Recommendation of Conservation Committee of California Oil Producers.

‡ Estimate of actual production under prescribed regulations, which do not fix a definite state total allowable.

§ Texas, California, Oklahoma, Louisiana, Kansas, New Mexico, Arkansas, Michigan.

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are several million barrels larger than at this time last year, indicating that supplies are sufficient to take care of the increased demand under the defense program.

Lubricating oils, like gasoline, continued particularly strong, the high rates of industrial and commercial activity of the nation having stimulated domestic consumption to such extent that the large loss of export business has been virtually compensated. Minimum quotations for both bright stocks and neutral oils were 1-cent-a-gallon higher last week than a week before in Western Pennsylvania and in the Mid-Continent. Demand for wax also was reported heavy, and some Mid-Continent refiners advanced their quotations for that product.

Michigan Crude Raise

Reacting to a 5-cent raise in Illinois on April 28, Michigan crude oil prices moved up a straight 10 cents a barrel between May 1 and May 5 to provide $1.37 to $1.38 oil for 45 percent of the state's output. Prices now are at the highest general level since 1936, when $1.42 oil prevailed in the major pools. Starting down in early 1937 when the Buckeye field started to come into production, prices continued to slide to a low of 68 cents by mid-1938. Since mid-1939 the price movement has been steadily upward.

The current shortage of Michigan crude for plants largely dependent on local fields was chiefly responsible for the willingness at least to go ahead of the Illinois boost of 5 cents. The basic reason for the quick reaction to the Illinois change was the present close relationship between the two areas from the standpoint of several Michigan buyers. About 6000 barrels of Illinois crude is now being purchased by plants at Alma in the heart of the refining area where most of the crude comes from local fields. It appears definitely to the advantage and necessity of plants using Illinois crude to keep the Michigan crude price up to a working differential.

The new price schedules and effective dates follow, all representing a straight 10-cent boost: Grand Rapids, Allegan and Bloomingdale, $1.38 a barrel, effective May 5; Midland, Porter, Wise, Crystal, Saginaw and Vernon, $1.37, effective May 1; Temple, Freeman-Redding and Winterfield, $1.32, effective May 1; Buckeye, Edenville, Beaverton and Monitor, $1.35, May 1; Adams-Arenac, $1.20, May 1; and West Branch and Clayton, $1.17, effective May 1.

GEORGE P. LIVERMORE, West Texas drilling contractor and president of Great Western Producers, Inc., has transferred operating headquarters from Odessa to Lubbock, where offices are located in the Lubbock National Bank building.

World-Wide Developments

New Wildcat Drilling Near Puerto Wilches

Magdalena Valley Petroleum Company was drilling a new Colombia wildcat, Cimitarra 1, on a 33,000-hectare concession formerly held by Socony-Vacuum Company west of and fronting the Magdalena River. The test is in the corner of the north and east boundaries of the concession, close to the river and opposite the town of Puerto Wilches on the east bank. It was drilling below 440 feet on a swampy site.

Last year, Socony-Vacuum Company, after drilling a number of tests on its Restrepo concession, about 17 kilometers east of Cimitarra 1, surrendered the concession to the government.

On the Barco concession, Colombian Petroleum Company was drilling below 4860 feet in Socuavo 1, wildcat, and coring intermittently in hard sandstone. Having overcome mechanical trouble in Tres Bocas 2, the company resumed drilling. South Sardinata 1, wildcat, was below 100 feet in shale.

May Reopen Bolivian Expropriation Negotiations

Possible reopening of neogtiations between the United States and Bolivia concerning Bolivia's expropriation of American oil properties in 1937 is seen in the presence in Washington of Dr. Carlos Salamanca, Bolivian congressman. Dr. Salamanca's visit to Washington is part of a three-month tour in this country at the invitation of the American government.

On landing in New York, Dr. Salamanca declared he hoped to clear up points of misunderstanding between his country and the United States. He implied that he may discuss with Washington officials the subject of Bolivia's expropriation of properties of the Standard Oil Company of Bolivia, subsidiary of Standard Oil Company of New Jersey, adding that Bolivians resent American governmental interposition in the dispute between Bolivia and the company.

Bolivia is seeking a $10,000,000 loan from the United States, which is apparently contingent on achieving a settlement of that dispute. Last March, the Bolivian senate was the scene of debates on the subject.

Russian Newspaper Critical of Oil Industry's 1940 Results

Pravda, Russian newspaper and mouthpiece of the government, recently summarized the country's oil industry in 1940, and found results "have not been satisfactory."

"In spite of the Stalin five-year plan, the production and refining of petroleum in the U.S.S.R. stand far behind the production in the United States, although the geological conditions in the U.S.S.R. are significantly more favorable," the paper said.

It is evident that troubles in the Russian industry are partly due to a need of oil machinery, which Russia imported from the United States at a value of $2,600,000 last year. Pravda said, "according to a decree of Stalin, the production of machinery and equipment especially devoted to the petroleum industry is to be built up in the shortest time."

The chief of the State Petroleum In-

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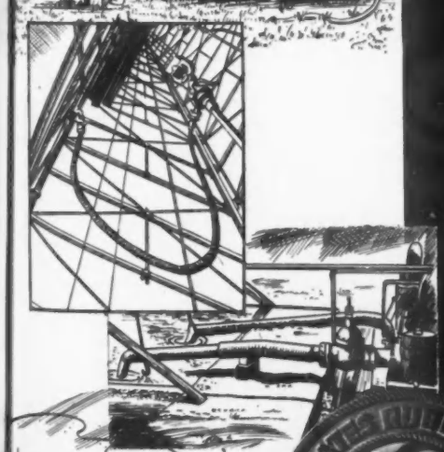

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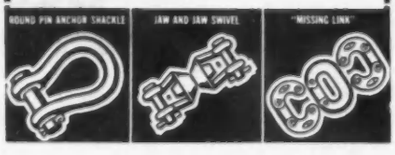


spection Bureau is quoted as saying "losses in production and refining have been excessive, running to over 1,500,000 tons yearly." Particularly criticized is failure to utilize natural gas profitably.

Pravda said, "More consideration must be given to a better utilization of the natural gas deposits. In most oil fields, the gas which was discharged was seldom used. Therefore, beginning January, 1941, it has been forbidden to open new oil fields without the presence of technical equipment to capture the gas."

It is pointed out that refining practices and obsolete equipment have also occasioned considerable losses. Losses of gasoline in two refineries in the Grozny field drew a severe governmental censure. Faulty manufacturing methods have resulted in the production of gasoline and kerosene of improper quality.

Plan Extensive Expansion Program for This Year

Petroleos Mexicanos, government oil monopoly in Mexico, has announced a 50,000,000-pesos expansion program to be carried out this year. The program includes building new storage tanks in the Poza Rica field, installation of natural gas separators and compressors in other fields, enlargement of the Cuidad Madero refinery, and construction of a catalytic polymerization unit in the Bellavista refinery.

The program is expected to double refinery capacity, which stands at about 100,000 barrels of crude daily.

Plan Subsurface Exploration In Berbice District, B. C.

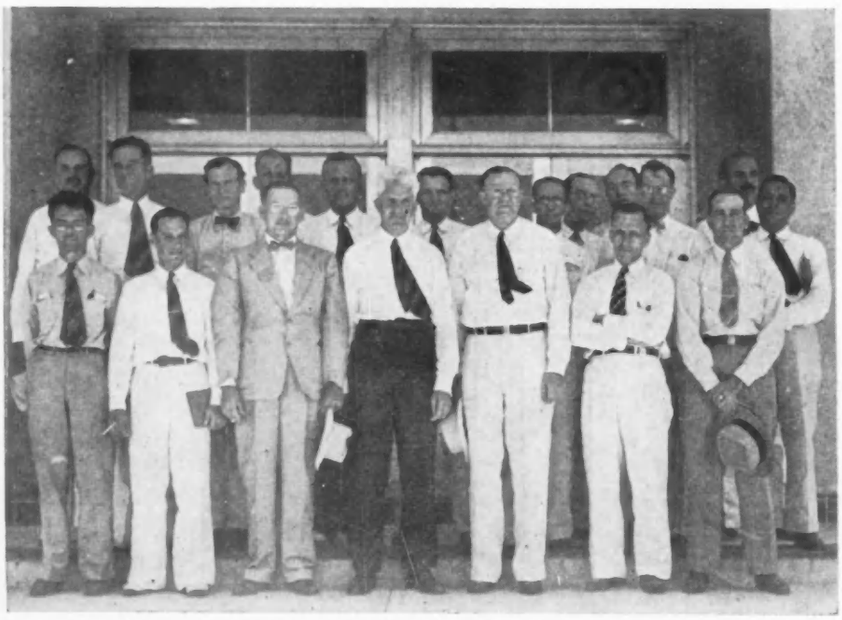
No drilling has been undertaken in the Berbice district of British Guiana, but preparations for a geological subsurface exploration in that region have been made. In 1939, the Central Mining & Investment Corporation made a seismic survey of the district, and the decision for further exploration presumably arose from the results of the survey. Coastal deposits in the Berbice-Courantyne area have been shown to have a thickness of at least 1600 feet.

Prepare Location for Wildcat In Atapirire Region

Socony-Vacuum Oil Company was preparing location for Hamaca 1, wildcat 11 miles north of Atapirire in southwestern Anzoategui. In the Guario section of the San Joaquin region, the company was coring Guario 3 below 7400 feet a few weeks ago. Guario 4 was drilling in shale below 4672 feet. Anaco 1, Roble area, was coring below 9650 feet.

In the Santa Ana region of eastern Venezuela, Texas Company of Venezuela's Rincon Largo 1, below 9600 feet, was being given additional tests after proving productive last month. The company's affiliate, S.A.P. Las Mercedes, was coring at 6232 feet in Mercedes 1, in central Guarico state.

Mene Grande Oil Company on May 1 was drilling and coring No. 3 in the Santa Rosa field at 5449 feet, the fourth well in the Leona field at 6158 feet, and Quiamare 1, wildcat in northern Venezuela, at 4495 feet.



Representatives of Standard Oil Company of New Jersey affiliate companies are pictured during a recent annual industrial relations conference for the Caribbean area held in Aruba. In the front row, left to right, are J. O. Gray, Standard Oil Company of Venezuela; Charles Smith and L. G. Smith, Lago Oil & Transport Company; C. E. Shaw, Standard Oil Company of New Jersey; T. S. Campbell, Lago Oil & Transport Company; E. Latour, Tropical Oil Company, El Centro; T. E. Peake, Lago Petroleum Corporation. In the second row are Whitney Colby, Lago Oil & Transport Company; A. Neunhoffer, Lago Petroleum Corporation; H. B. Wilson, Jr., Standard Oil Company of Venezuela; W. M. Hall, Lago Petroleum Corporation; W. B. Brown, Standard Oil Company of Brazil; H. L. Chapman, Standard Oil Company of Venezuela; Manuel Mosquera, Cia. de Petroleo Lago; E. Amado, West India Oil Company, Puerto Rico; D. M. Antrim, West India Oil Company, Panama; B. Teagle, Standard Oil Company of New Jersey; R. C. Geiger, Tropical Oil Company, Cartagena, and M. Menendez, Standard Oil Company, Cuba.

U. S. FIELD OPERATIONS

Oklahoma-Kansas

Velma Pool Revived by Large Wilcox-Sand Well

Skelly Oil Company and Selby Oil & Gas Company obtained a major Wilcox-sand strike to revive the shallow Velma oil and gas pool, Stephens County. Field men estimate capacity from 50 to 75 barrels hourly on preliminary test. Frensley 1, C NE NE 35-1s-5w, flowed gas after three minutes, and 13 minutes later began flowing live green oil for 14 minutes with packer set at 7142 feet on drill-stem test in Wilcox sand, topped at 7006 feet. A ¾-inch choke was set on top and bottom during the test.

Operators control a block of 2500 acres surrounding the discovery, and considerable adjacent acreage. Lee Drilling Company, Tulsa, had contract on the initial deep test. Mississippi Caney was topped at 3410 feet. Sycamore 3675 feet, Woodford 3990 feet, Hunton 4605 feet, Sylvan 5216 feet and Simpson green shale 6920 feet. Strong odor and fair saturation was recovered at 6920-7074 feet, and black oil staining at 7069-7142 feet. Live green oil was encountered at 7142-94 feet in sands intermittent with shales.

Hole will be carried into basal Simpson for further testing. Major controlling acreage in the area is held by Magnolia Petroleum Company, Mudge Oil Company, Gulf Oil Corporation, Stanolind Oil & Gas Company, Amerada Petroleum Corporation, The Pure Oil Company. Numerous smaller operators also have leases.

Velma pool was discovered in 1917, and includes Sections 6, 7, and 8-2s-4w; Sections 1, 2, 3, 4, 10, 11, 12, 13, 14, 15 and 23-2s-5w, and Sections 22, 23, 26, 27, 34, 35 and 36-1s-5w, Stephens County. Pennsylvania sands intermittent with shales are productive from 400 to 1100 feet, and from 2225 to 2500 feet on a folding-type structure. Before Frensley 1, deepest horizon tested was 4000 feet.

Average daily production in 1940 was 730 barrels a day. There are approximately 600 shallow producers in the pool.

Cromwell Sand Provides Okfuskee County Pool

The Texas Company completed Butcher 1, C N½ SE NW 15-12n-9e, 1¼ miles south of Mason pool and three miles north of a Hunton lime gas pool, Okfuskee County, flowing 57 barrels in 24 hours, with no water present, from Cromwell sand at 3305-25 feet. Crude will be trucked out, as no pipe line connection is available. Nearest artery is five miles distant.

Glenn S. Norville et al's Fleet 1, SEc 14-5n-6e, five miles southeast of Konawa pool, Seminole County, opened a new gas pool. Senora sand was perforated with four holes at 1930-37 feet. After shutting in for 15 minutes, casing pressure built up to 530 pounds, and after 30 minutes flowed between 5,000,000 and 6,000,000 feet of gas. Operators squeezed with 59 sacks of cement for additional testing. Hole is bottomed at 2285 feet in Pennsylvania Caney, topped at 2125 feet with plug set at 2067 feet.

Arrow Drilling Company's Granneman 1, SW NW SE 23-9n-11e, nine miles east of Wetumka, Hughes County, topped Cromwell sand at 3439 feet and cored good staining at 3442-45 feet. Seven-inch casing was cemented at 3437 feet, and plugs will be drilled shortly. Upper shows in Booch sand, topped at 2250 feet, and Gilcrease at 2662 feet may also be tested should the lower sand prove uncommercial.

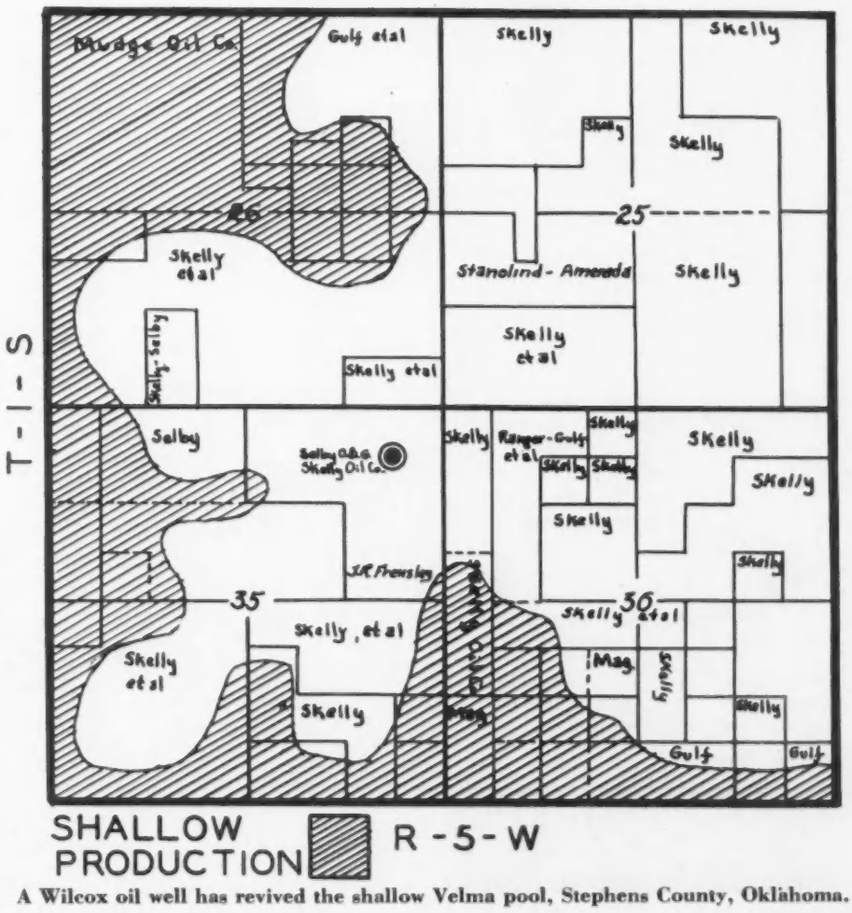
Hall-Jordan Oil Company's Whitehead 1, C W½ SE SW 36-10n-3e, Tecumseh Lake pool discovery, Pottawatomie County, flowed 2501 barrels of crude in 41¼ hours through a 1-inch casing choke, grinding out 0.2 percent basic sediment and 0.8 percent water. Three miles southeast of the pool, J. E. Crosbie and Atlantic Refining Company's School Land 1, C E½ NE SW 16-9n-4e, logged Hunton lime at 4445 feet, Viola lime at 4582 feet, Simpson dense 4639 feet, Dolomite 4667 feet, Wilcox sand 4714 feet, and penetrated to 4714 feet. Drill-stem test open 45 minutes at 4704-22 feet recovered 2100 feet of salt water. Electric log disclosed water in Hunton, Viola and Dolomite. Operators cemented 7-inch casing at 4713 feet to test possible shows in Upper Dolomite.

Mico Oil & Gas Company's Davis 1, NEc 33-10n-8e, north of Bethel pool, Seminole County, plugged back to 3490 feet and drilled out to 3498 feet in Union Valley. Hole filled with water, with a small show of gas. Hole may be abandoned. Russell S. Tarr staked Morgan 1, NE SW NE 14-9n-7e, offset to the West Bethel pool discovery.

Arbuckle Lime Provides New Trego County Pool

W. M. McKnab et al opened a new Arbuckle-lime pool in Trego County, Northwestern Kansas, between Wakeeney and Gugler pools on a northwest-southeast structural trend. Krysi 1, C N½ NW NE 1-12-22w, six miles from either pool, filled 600 feet with crude in 11 hours following treatment with 3000 gallons of acid. Crude tested 34-gravity. Arbuckle lime was topped at 4043 feet, and penetrated to 4070 feet. With plug set at 4000 feet, 10 shots at 3960-70 and 31 shots at 3960-68 feet brought ¼-barrel per hour. Eleven holes at 3969-73 feet failed to increase fluid volume, which prompted operators to acidize.

George Reeves et al Stark 1, C W½



A Wilcox oil well has revived the shallow Velma pool, Stephens County, Oklahoma.

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SW NW 18-26-11w, seven miles northeast of Iuka pool, Pratt County, gauged 11,960,000 feet of gas daily, and sprayed sufficient oil to require a separator hooked up. Viola lime is pay at 4123-58 feet. Hole was loaded with 1200 feet of water, and cement plugs drilled for no show. After 100 gallons of acid, hole filled 300 feet of oil and a strong gas flow. Arbuckle lime was dry at 4289-4339 feet.

The Texas Company extended Greenvale pool, Russell County, ½-mile south at Kaufman 1, C N½ NW NW 9-15-12w. Following a fill-up of 2800 feet of oil in 12 hours, swab recovered 60 barrels the first hour. Gorham sand, topped at 3266 feet, was penetrated nine feet. Further testing awaited final tank battery installation.

Continental Oil Company completed Stoskoph 1, SE NW SW 28-16-13w, west outpost to Ainsworth pool, for 539 barrels per day on the pump. Crude tested 35-gravity. Arbuckle lime at 3391-3403 feet was acidized with 3000 gallons. Marshall pool, Ellis County, was extended southeast at Amerada Petroleum Corporation and Republic Natural Gas Company's Hadley 3, C E½ SE NE 31-11-17w. After acidizing Arbuckle lime at 3641-49 feet with 2500 gallons, the semi-wildcat pumped 143 barrels of oil in 14½ hours.

One mile southwest of East Big Creek pool, Russell County, C. L. Carlock completed Mitchell 1, C E½ NE SW 6-15-14w, for 202 barrels daily on the pump. Pay is Lansing lime at 2937-68 feet.

Illinois-Indiana

Cement 7-Inch Casing in Louden Devonian Test

Seven-inch casing has been cemented at Jarvis Brothers and Marcel's Sinclair 1-D, NW NE 29-8n-3e, Loudon pool, Fayette County, where a three-foot soft, porous Devonian lime section was drilled at 2960-63 feet. Top of Devonian was 2954 feet and an odor of gas was encountered at 2957 feet. The test may open a Devonian drilling campaign in the field, now productive in three shallow horizons, Weiler, Paint Creek and Bethel sands. Sinclair 1-D is two miles southwest of another Devonian test which was due for completion earlier than the Jarvis venture, Whisenant & Trenchard's Henry Lilly 25-D, delayed by loss of circulation.

The Louden field discovery, The Carter Oil Company's Mary Miller 1, drilled in 1937, was originally a Devonian producer but was plugged back and finally completed in Benoist sand. Since then there have been only a few scattered tests to the formation, all of which are acknowledged to be off or near the edge of the structure.

Whisenant & Trenchard used 675 sacks of cement in plugging back from 3130 to 2558 feet at Lilly 25-D in order to shut off crevices in which circulation had been lost. Drilling was to be resumed after casing had been cemented. The Devonian was topped at 3060 feet.

In Washington County, highlight of the week was recovery of 32 feet of Cypress saturation at an outpost to the Irvington pool, now productive only in the Bethel and Devonian. Gulf Refining Company's Brink 2, NW SW SW 14-1s-1w, was waiting on cement with pipe set to Benoist at 1536 feet. A drillable section of casing was set opposite the Cypress at 1405-37 feet, which will be examined after a test of the Benoist has been made. Top of the Cypress was 1397 feet. The well is the first in the county to find a good show in the Cypress section.

In Marion County, Hudson-Hess' Ben Young 1, two miles west and north of the Lake Centralia-Salem field, in wildcat territory, SW SW SW 7-2n-2e, recovered 20 feet of broken saturation in the Cypress at 1745 feet, but was drilling below 2002 feet to explore the McClosky. There is no Cypress production in the Lake Centralia-Salem field.

In Marion County's Tonti field, Absher-Booth's McMackin 8, SW SW 3, 4-3n-2e, an east outpost to Benoist production, was shut down with more than 800 feet of oil in the hole, total depth 1948 feet. Operators were drilling McMackin 8-B, 60 feet north of No. 8, and planned to core the Benoist section to the water level in order to determine how much sand exists before completing No. 8, which now is only eight feet in the formation.

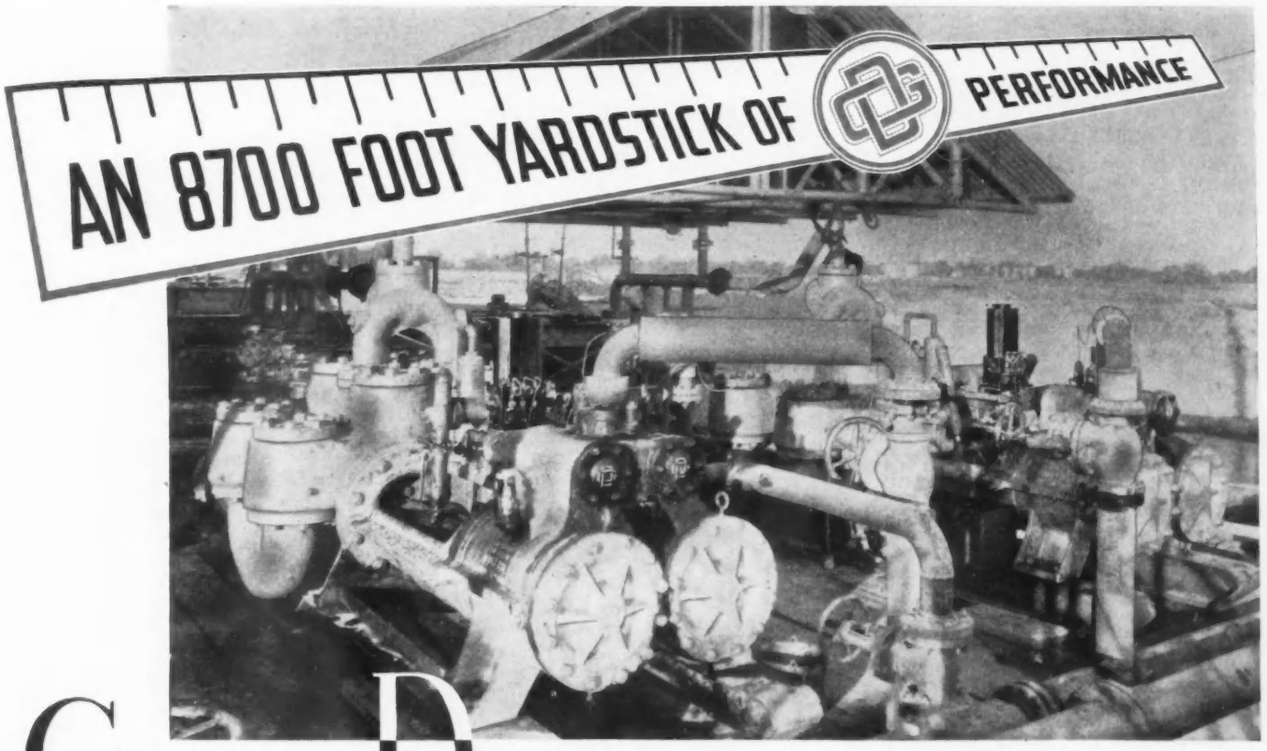
A Saline County wildcat, Thompson Drilling Company's Otis Carter 1, NW NE SE 17-8s-7e, ½ mile north of Eldorado, was preparing to drill plug to test saturation in the Tar Springs after cementing casing to 2242 feet. At present there is no production in the county. Rotary tools were being rigged up for Lawrence Potter et al's T. W. Sutton 1, south of Eldorado, SE SW 28-8s-7e.

A prospective Jackson County pool opener, Wiser Oil Company's Overholt 1, C SE SW 22-7s-1w, was being cleaned out following a nitro shot in the Aux Vases at 2197 feet. It was probable that a Benoist show at 1999 feet, considered to be better than that in the Aux Vases, will be tested before the well is completed. Some observers were predicting the test would make about a 25-barrel producer in the Benoist.

Standard tools were being rigged up to drill plug for a southeast outpost to the Mt. Carmel field of Wabash County, E. O. Olds' Fairgrounds 1, SW NE SW 21-1s-12w, where saturation was recovered from the Cypress sand. Three miles north and west of Mt. Carmel, Burr Lambert was rigging up rotary tools for Henry Baumgart 1, SE NE SE 6-1s-12w, a wildcat four locations south of a dry hole drilled a year ago.

A Clinton County wildcat 1½ miles southwest of the Bartelso field, Niehoff Fehrmann 1, NE 23-1n-4w, was abandoned at an undisclosed depth. Trio Oil Company's Paulsmeyer 1, NE NE NW 19-1n-1w, another Clinton County wildcat six miles west of Wamac, was drilling at 1408 feet, but had had no shows, according to reports. Southwest of Posey, Edward Mack et al's Ben Maschhoff 1, SW 18-1n-2w, was drilling at 1005 feet, also in wildcat territory.

Tide Water Associated Oil Company's Bacon 1, NE SE NE 5-5s-14w, southeast extension to the New Harmony field of White County, was clean-



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ing out after a 40-quart shot in Aux Vases sand at 2224-44 feet. A White County wildcat northwest of Maunie, L. B. Jackson et al's Hanna 1, NE NE NE 28-5s-10e, was shut down on orders at 3150 feet while operators debated whether to test a show in McClosky.

R. B. Martin's Lester 1, prospective pool opener in Edwards County, W½ SW SW 19-2s-10e, was drilling plug after a squeeze job. The test was being completed in McClosky lime at 3339 51 feet, and previous to the squeeze job was showing one-third water to two-thirds oil. Before cementing, it was acidized with 500 gallons.

J. L. Youngblood's Hamilton County wildcat, R. M. Johnson 1, SW NE NE 27-6s-7e, was abandoned through the McClosky after finding light shows in the Tar Springs at 2465-72 feet, in Aux Vases at 3098-3110 feet and in the McClosky at 3220-25 feet. One of the largest producers yet completed in the county is in the Hoodville field, Carter Oil Company's Grimes 2, Section 2-6s-6e, which swabbed 930 barrels from the Aux Vases in 24 hours.

A Wayne County wildcat, Art Muhlbach's Gordon 1, W½ SE SW 36-2n-8e, over a mile from production, was testing a show of McClosky oil. Glen Dean was topped at 2505 feet, Benoist at 2556 feet, and St. Genevieve at 3020 feet.

The North Boos field of Jasper County was given a slight north extension with completion of Lain Oil & Gas Company's C. E. Henry 1-A, SW NW NW 9-6n-10e, which flowed 320 barrels in 19 hours from the McClosky at 2794-2800 feet following an acid treatment.

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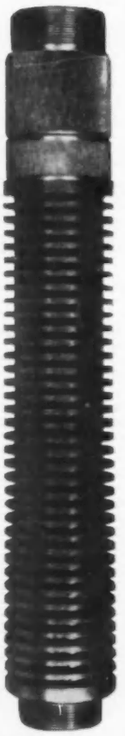

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Hatfield Area Revived With Waltersburg Well

Jack Ladmer's Jess Kennard 1 (formerly Herbert Cokes), SE NE NE 12-7s-8w, 1½ miles northwest of Hatfield, Spencer County, was being put on pump for an estimated 30 barrels a day natural from the Waltersburg sand at 1044-47 feet.

Location is just southwest of a light Waltersburg pumper, completed last year on Prudential Life Insurance Company lease, and has revived interest in the area that saw an active lease play die quickly last year as result of several dry holes to the east.

Two locations north of the new producer, Jess Wilson's McCoy 1, SE SE SE 1-7s-8w, was drilling at 150 feet; and to the southeast, L. L. Benoist was rigging up cable tools for Prudential Life Insurance Company 3, C W½ SW NW 7-7s-7w.

South of present production in the Bufkin area of Black Township, Posey County, Dirickson et al Elza Utley 1, NW SW NE 26-6s-13w, Gulf Refining Company farmout, was waiting on cement with casing set at 2431 feet to test promising saturation in Cypress. Hole was bottomed at about 2450 feet.

Gulf Refining Company's Levin Blackburn 1, NE NE SE 23-6s-13w, north offset to the company's Schreiber 1, Cypress-sand discovery, plugged back and set casing at 1830 feet to test Palestine sand show topped at 1802 feet, with drillable casing opposite another promising show in Degonia at 1628-44 feet. Hole was bottomed through a dry McClosky at 2910 feet.

Dirickson et al's Slygh 1, SE NW NW 23-6s-13w, northwest of Schreiber 1, was drilling in Ste. Genevieve series, topped at 2735 feet, with no shows reported. Starting at surface elevation of 492 feet, Renault was topped at 2720 feet.

Southwest of Schreiber 1, Gulf Refining Company was building derrick for a new start, Henry Wedeking 1, NW SE SE 23-6s-13w. Parker Drilling Company is contractor.

In the Neiderst (College) pool of Point Township, Posey County, Basin Drilling Company and Riley's Oakland City College 2, SW SW NE 16-8s-14w, drilled plug and was preparing to shoot Aux Vases sand pay at 2560-73 feet.

Abandoned at least temporarily was a wildcat in north Point Township, Posey County, Johnson Oil & Refining Company's John W. Spencer 1, SE SE SE 26-7s-15w. Aux Vases lime pay at 2732-37 feet failed to get a commercial show of oil after 1000 gallons of acid, and hole was deepened into water and abandoned at 2778 feet.

In the Rockport gas field of Spencer County, The Texas Company was completing Scamahorn 1, SW NE NW 29-7s-6w, for an oil well in the Palestine sand. It offset gas production of Gulf Refining Company. At 891 to 897 feet, test was gauged for 16,000,000 feet daily, and at 915 feet, bottom of the hole, gauge was at 19,000,000 feet. Gas has been cemented off, and 5½-inch casing set in an effort to complete as an oil well. In most instances, the gas field has been developed on 40-acre spacing, and if the present test on a 10-acre tract plan pays off for an oil well, it will require several offsets by Gulf Refining Company and Kentucky Natural Gas Company.

Nebraska-Iowa

Test Fails to Revive Abandoned Dawson Pool

Uhri Oil Corporation failed to revive the abandoned Dawson pool, Richardson County, Nebraska, at Ogle 1-A, NW SE SE 9-1n-14e, 10 miles west of Falls City pool. Plugs were drilled to 2258 feet in Hunton lime. After shutting in for 48 hours, hole filled 50 feet with crude and failed to increase in volume.

Indian Territory Illuminating Oil Company's Bankers Life 1, C NE SE 3-2n-15e, wildcat drilled deeper, topped Viola lime at 3160 feet and abandoned after running electric log to 3185 feet. Previous depth was 2476 feet in Hunton lime, topped at 2418 feet.

Johnson & Mitchell's Eickhoff 1-A wildcat in C NW NW 4-2n-16e, six miles north of Falls City pool, topped Lansing lime at 985 feet, Mississippi lime 2195 feet, Hunton lime at 2526 feet, and hole was plugged at 2571½ feet. Core at 2528-71½ feet showed dry dolomite with some porosity.

Walt Rider et al's Warren 1, C NE NE 21-3n-5e, Gage County, topped Hunton lime at 1948 feet, and showed some gas at 2000 feet. Core was dry at 2020-38 feet, and bit was rotating below 2450 feet without commercial shows.

In Pawnee County, Henry Blazer suspended operations at Wilson 1, NE NW NW 4-1n-10e, at 875 feet.

Two new wildcats were staked in Nebraska. Kees et al moved in a rotary rig for Kiechel 1, SEc 4-5n-13e, 10 miles northwest of Auburn, Nemaha County and O. O. Petroleum Company dug cellar and pits for Jensen 1, NWc 26-14n-37w, central Nebraska.

Continental Petroleum Company of Nebraska quit drilling at 1972 feet in Gauchat 1, SW NW NE 26-6n-13e, Nemaha County. Mississippi lime was based at 1790 feet. Hole may be deepened to Hunton lime.

Twelve miles northeast of Auburn, Nemaha County, Ellis Brothers et al's Armstrong 1, C W½ NE 10-6n-15e, was slowly making hole below 195 feet.

Zimmer et al's Roddy Estate 1, C S½ SE SW 31-9n-14e, filled 2300 feet with water in Viola lime, topped at 1936 feet. Six-inch casing was cemented at 2320 feet for a shut off, and hole reached 2385 feet.

In Taylor County, Iowa, Pryor & Lockhart and Stanolind Oil & Gas Company's Marr Estate 1, C E½ NE SW 32-68n-33w, four miles southeast of Bedford, was drilling below 2793 feet without shows.

The Ohio Oil Company's Wisnom 1, C NW NE 23-68n-41w, Fremont County, Iowa, topped Simpson at 2795 feet and cored at 2901-16 feet for dry dense dolomite. Second core at 2922-32 feet showed nine feet, three inches of white sand. St. Peter (Wilcox) was logged at 2921 feet, Arbuckle lime at 2951 feet, Mt. Simon 3160 feet, and hole plugged at 3378 feet after running an electric log.

In Holt County, Missouri, Brin & Nathan et al, abandoned Decker 2, NWc 1-61n-38w, at 2424 feet in Hunton lime, topped at 2270 feet.

Indian Territory Illuminating Oil Company abandoned McGinnis 1, C SE SW 12-66n-39w, Atchison County, Forest City sector of Missouri. This tri-

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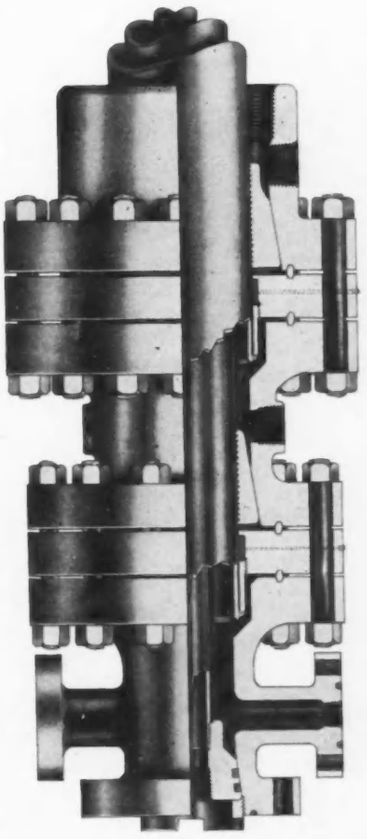

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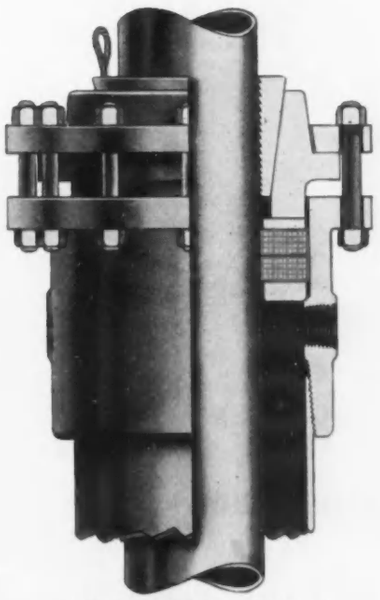

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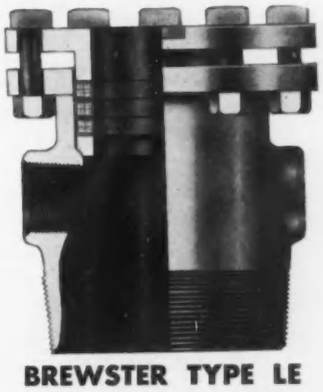
4000, 6000 Pound Tests



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county test topped Lansing at 505 feet, based Kansas City at 792 feet, Mississippi lime 1675-1951 feet and topped Hunton lime at 2190 feet, core at 2185-2236 feet was dry.

Thorsen & Pebley et al's Grant 1, C SE SE 23-62n-40w, Holt County, topped Lansing at 607 feet, and was drilling below 1100 feet.

LEONARD PHILLIPS, Calgary, Alberta, was re-elected president of Davies Petroleum Company at the annual meeting held recently at Vancouver, British Columbia. Directors elected were E. S. Lowick, Calgary, secretary-treasurer; F. H. Whitney, Calgary; Gilbert H. Young, Vancouver; and Fred T. Brooks, Hamilton, Ontario, vice president.

New Mexico

Corbin Pool Offset Running Structurally High

Helmerich & Payne, Inc.'s Corbin-Texaco 3-A, C SE NW 10-18s-33e, third test for the Corbin pool, western Lea County, confirmed its high structural position by developing heavy flow of gas from the regular Permian producing level. This northeast outpost is credited with having flowed at estimated rate of 12,000,000 feet of dry gas daily after drilling plugs from 5½-inch pipe at 4203 feet, with hole bottomed at 4327 feet. However, the gas volume declined sharply after blowing for a period. No appreciable amount of gas was encountered by the offset pumpers. The company acquired the discovery lease and block from The Texas Company last summer.

J. W. Brown, Inc. et al's State 1, Lot 11, 4-16s-35e, central Lea County wildcat and 6½ miles west of Lovington, was drilling at 3930 feet, with elevation of 4043 feet. It is relatively high on structure when correlated with failures to the south and east, having logged top of Yates sand and frosted grains at 2940 and 2950 feet, respectively, first broken lime at 3110 feet and red sand beds at 3800 feet. Fullerton Oil Company's State 1, C NE SE 18-16s-33e, topped anhydrite at 1337 feet, and was due to run protection string at 1340 feet.

Prospecting in Lea County has been revived in recent weeks, with majors contributing cash towards the drilling of the widely scattered tests. The latest additions involved Harry Leonard and Van Welch's State 1, C NW NW 18-20s-33e, 3½ miles east of the Halfway pool, and Helmerich & Payne, Inc.'s State 1, C NW SW 3-14s-38e, seven miles northwest of the Wasson field, Texas.

Texas Comptroller Outlines Forms Under New Tax Law

New forms for reporting gas taxes under provisions of a new Texas law that became effective May 1 were outlined last week by State Comptroller George H. Sheppard. In a letter to gas producers, Sheppard said that five instead of two reports would be required, plus some information now filed with the Texas Railroad Commission.

Because the law is not clear on all points, Sheppard said he had requested an opinion from the attorney general "on some 50 questions pertaining to the enforcement of this law." In a letter to gas operators, he said in part:

"We wish to suggest that we will probably need five reports instead of the present two: purchasers, 150; producers, 250; recycling plant, 151; gasoline plant, 152; importer, 153.

"1. Purchaser: list pipe line or fuel purchases only. Report nothing but actual purchases from other producers. All plants will file 151 and 152 only.

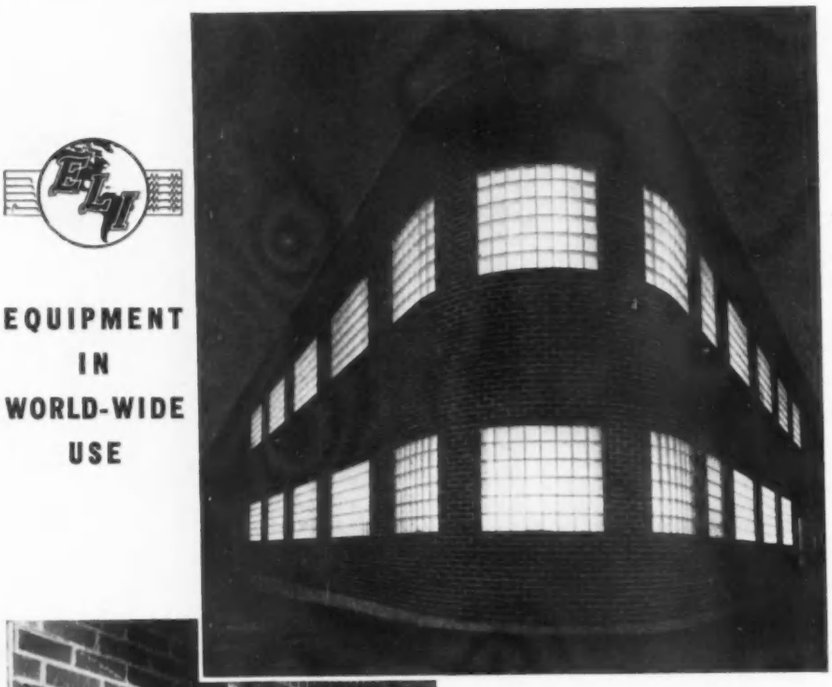
"2. Producers: Report all gas produced except gas processed by the producer; pay tax on this report on all gas except gas sold to others. Report all gas processed by outside companies.

"3. Recycling plant: Tax computation; attach copy of RC-1 now made to Railroad Commission.

"4. Gasoline plants: Tax computation; attach copy of form EH-4 now made to Railroad Commission."

Sheppard explained that the commission forms were included because duplicates of these could be supplied without an operator furnishing the same information on a separate report form to be supplied to the comptroller. He invited all operators to make suggestions on forms, so that new forms could be ready for return to the comptroller by June 25, when the first tax report is due. He contemplates a meeting in Austin to work out details before the forms are finally sent to the printer.

G. L. BADER has been named representative for The Midvale Company in Texas, Oklahoma, Arkansas and Louisiana, with headquarters in Houston.



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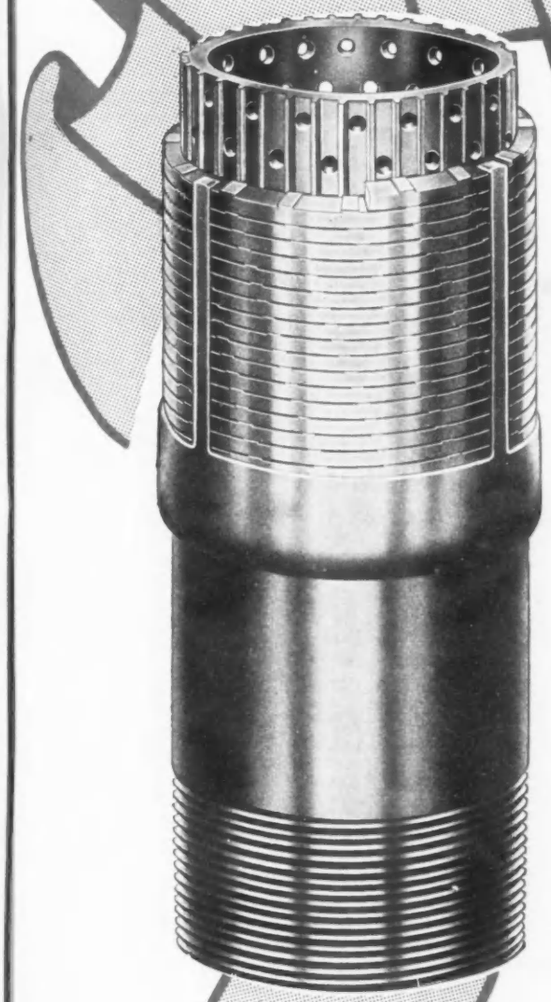

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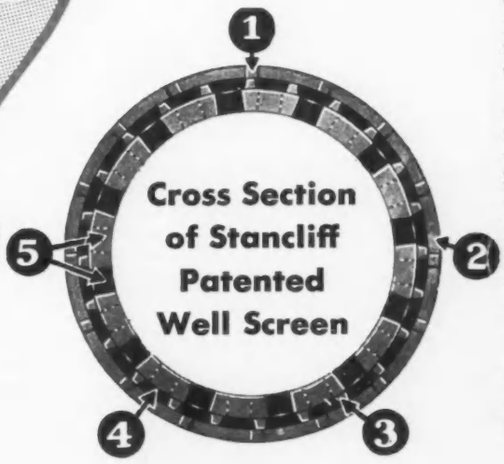

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East Texas

Rusk County Wildcat to Run Pipe for Test

A southwestern Rusk County wildcat of Ross Sears and A. O. Phillips on the J. F. Pool 71-acre tract, George May Survey, will run pipe for a production test after logging promising show of oil and gas in drilling the Woodbine section to 4126 feet. Top of Woodbine sand was logged immediately below Austin chalk section at 3930-4043 feet, with elevation of 412 feet. Broken sand at 4040-60 feet yielded 150 feet of gas-cut rotary mud and trace of free oil on five-minute drill-stem test. Surface pressure built up to 750 pounds, and bottom-hole pressure was calculated at 1575 pounds. Pool 1 is in southeast corner of the lease, and 3½ miles south of gas-distillate production on the south end of the East Texas field. It is about four miles northeast of New Salem.

Intermittent prospecting has occurred between New Salem and the big field since 1931, with several tests logging oil shows before reaching salt water beds. Nearest failures involve John W. Merritt et al's Stallings 1 and Tipps 1, bottomed at 3944 feet and 3983 feet, respectively. They are a mile west by north of Pool 1, and are higher on structure.

Bobby Manziel, discoverer of the Hawkins field, has authorized a Woodbine test on a northwestern Cherokee County geophysical prospect that has commanded high lease and royalty prices in recent months. Location will be on the Nagle tract, Thomas Timmins Survey, four miles west of Mount Selman and two miles northwest of Larissa. Humble Oil & Refining Company is the largest lease owner in the area.

Prospecting in the Woodbine belt has increased materially this spring. The Hawkins discovery late last year caused a general revival of geophysical activity, and numerous blocks have been leased as result of this activity. Majors generally favor areas that are considered favorable for production in the Trinity series.

Extension for Chapel Hill

The Chapel Hill deep field, eastern Smith County, recorded its seventh oil producer from the Pettit when Sun Oil Company's Friedlander 1 gauged 256 barrels initial, flowing 14 hours through ¼-inch choke and the remainder of the test on ⅛-inch choke. Production is from casing perforations at 8303-37 feet, and followed treatment with 4000 gallons of acid. This well provides a ½-mile east extension for the north end of the field, and affords a new depth record for oil production in the Woodbine basin by a narrow margin. Opelika has the gas-distillate depth record. Sun Oil company will be required to drill west and north offsets to this oil producer.

Shell Oil Company's I. N. Browning 1, north outpost, was checking flat with Friedlander 1, having topped the Travis Peak at 8354 feet, with elevation of 429 feet, and halted at 8372 feet to run pipe. Sun Oil Company's Mittie Dickerson 1, 3500 feet south of an oil producer on the southwest edge of the structure, was testing production after using 4000 gallons of acid on perforating pipe at 8216-33 feet, with hole bottomed in Travis Peak at 8342 feet. Thirteen tests, including the above pair in process of completion, were drilled to the Travis Peak, all proving dry in this red sandstone.

Two completions were pending in the Willow Springs 5-well deep field, Gregg County. Union Producing Company's Hays-Magnolia 1 landed 7-inch at 7390 feet after drilling through the Pettit gas-distillate zone to 7400 feet. Humble Oil & Refining Company and Gulf Oil Corporation, owners of three wells, were coring at 7320 feet on M. A. Fisher 1, northwest outpost. Roger Lacy et al's Horton-Dickson 1 was drilling at 5750 feet.

Tex Harvey Oil Company's Cartmell 2, north offset to northeast extension producer recorded by the Long Lake field last month, was coring at 5420 feet to establish the water table for the area. The Woodbine gas-distillate and oil sands were topped at 5308 and 5365 feet, respectively, with elevation of 350 feet. Plans are to try for a dual-well completion. Cartmell 1 has been officially designated as the East Long Lake pool, although it is only 6500 feet east of production, and assigned base allowable of 90 barrels daily. Sinclair Refining Company built 8100 feet of 4-inch line to handle the output by gravity.

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North and West Texas

Six New Abell Tests, Bring Operations to 23

Authorization of six new tests for the Abell pool, North Pecos County, gives the area 23 operations, with six wells on production. This expanded drilling program is likely to expedite the entry of one or more pipe lines. Humble Pipe Line Company and Shell Pipe Line Corporation are listed as prospective builders of extension lines from their southern Crane County carriers, while the Texas-New Mexico Pipe Line Company may also enter to accomodate crude nominations by Sinclair Prairie Oil Marketing Company.

Stanolind Oil & Gas Company, largest lease purchaser since the discovery of the Abell pool, made four of the new tests, including Polson 1, W¼ of E¼ H&GN Section 5, Block 3, and Williams 1, southeast corner lot 12, H&GN Section 24, Block 9, northeast outpost. Magnolia Petroleum Company accounted for the other two, giving it 11 operations with rigs active on eight sites. Magnolia Petroleum Company's Markey 1-B, northwest of the discovery, proved disappointing in the regular Simpson, and may be carried to the lower sand. Broken sand at 5378-5404 feet yielded small volume of oil with salt water on swabbing tests through tubing. Tests were made to determine if the water is due to defective casing seat.

Expansion of the producing area east is assured by George Abell et al's Rixse 1, which entered the oil sand at 4985-87 feet, with elevation of 2382 feet. Seven-inch pipe was cemented at 4975 feet to deepen before trying for a completion. This outpost logged top of Simpson between 4850-60 feet, being the highest on structure. Stanolind Oil & Gas Company's Conry-Davis 1, four miles southeast of the discovery, was at 4775 feet.

Deep producing honors were forfeited by Gulf Oil Corporation's University 1-F, Crane County wildcat, after extended swabbing tests through tubing revealed that a disproportionate volume of salt water accompanied the 46-gravity oil found in Ellenberger at 10,630-658 feet. The company's Waddell et al 21, outpost for the northeast portion of the Sand Hills field, flowed 132 barrels oil hourly on preliminary test after using 5000 gallons of acid at 4578 feet.

Amon G. Carter's Wasson 4-D, Gaines County sector of the Wasson field, was drilling shale at 10,380 feet, and is credited with being in the Simpson series. It is the deepest test in the upper basin, and a north offset to Wasson 5-D, which was completed late last year from Lower Permian at 6881 feet.

Humble Oil & Refining Company et al's Byrd 1, southeastern Hale County wildcat contracted to 9000 feet, else Ellenberger or granite, was drilling at 4100 feet.

Continental Oil Company et al's Todd 8, southeast edge of the Todd deep pool, Crockett County, flowed 25 to 30 barrels of oil hourly on preliminary test after using 2000 gallons of acid in Crinoidal at 5833-79 feet, but the oil flow ceased when the well changed to a gasser. It has been deepened to 5940 feet to resume testing.

Kenneth Slack et al's Wilson 1, 1½ miles southeast of the discovery gasser of the Quito pool, Ward County, responded to nitro shot in Delaware at 5023-57 feet, with an estimated flow of 25 barrels of oil daily while cleaning out shot cavings.

Clay County's Worsham Area Has First Ellenberger Well

The Worsham structure, eastern Clay County, recorded its first Ellenberger producer when Gulf Oil Corporation's Scaling 1, located amidst abandoned Strawn wells, showed an initial rating of between 250 and 300 barrels of oil with some salt water after using 5000 gallons of acid in Dolomite at 5766-5814 feet. The well produced 183 barrels of 45-gravity oil and 100 barrels of salt water in 14 hours on flowing and swabbing test, with considerable cavings in the hole. Liner will be cemented on top of the Ellenberger to exclude the cavings coming from the Bend, which was topped at 5600 feet.

Shell Oil Company has authorized a five-well drilling program in the immediate vicinity of its Mississippian lime discovery on the Coleman tract, eastern Clay County. Anderson 1, east offset to the discovery which logged a 150-foot broken pay section, has spudded, and the other tests are to be northwest,

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north and northeast of the 1100-barrel producer. Shell Pipe Line Corporation's West Texas-Mid-Continent 10-inch carrier is only a short distance removed from the pool.

Pois-Schulz & Pigg's Green 1, ½ mile west of most southerly producer in the Fargo pool, Wilbarger County, was awaiting orders at 4600 feet after making electric formation survey. Pipe may be run to test nominal porosity and oil stain at 4540-43 and 4552-56 feet in Strawn, topped at 4526 feet. This outpost is low on structure, and proved dry in the Cisco and Basal Canyon pays. Humble Oil & Refining Company will try for a northeast extension in drilling Anderson 2-B, ¼ mile north of its Anderson 1-B, which was showing for a producer in the Strawn at 4410-70 feet, having entered Strawn at 4404 feet. Wilcox Oil & Gas Company's Waggoner Est. 1, 3¼ miles southwest of the Rock Crossing field, entered the Strawn series at 4105 feet, and was drilling shale at 4330 feet on a 5000-foot contract.

Magnolia Petroleum Company was salvaging pipe and pumping equipment from about 200 stripper wells in the Burkburnett and Electra districts. These wells vary from 500 to 1800 feet in depth, and the majority have been on production more than 20 years. Contractors are doing the salvage work.

Jack E. Kadane, trustee, acquired Eph Griffin's half interest in their joint holdings in the Griffin-Kadane seven-well Strawn pool, northwestern Archer County, for $223,000, including $108,000 cash and balance payable from production. This deal involves four prolific wells in the 4300-foot sand and 1280 acres, including Griffin 3-A, southeast corner of Section 13, which flowed 142 barrels on 3-hour gauge through ½-inch choke from sand at 4328-46 feet. Phillips Petroleum Company, large investor of acreage south and east of production, has started Griffin-Johnie 1, NW NE Section 12.

Two nearby tests have been authorized for the Mississippi lime discovery recently completed in northern Young County by L. T. Burns et al on the Larimore tract. Shell Oil Company's Bloodworth 1-A is a north offset to the prolific 4927-foot producer, while King Oil Company and Heydrick's Daniel 9, southeast corner of TE&L Section 164, is ½ mile west of the latter. A. A. Horwitz and Wm. Oldom made location for M. K. Graham 1, near center TE&L Section 2912, for a 5000-foot test on a 2700-acre block in west central Young County.

The Mississippian is to be tested by Shell Oil Company's H. Henderson 9, first Ordovician test for the Antelope dual Strawn producing pool, southwestern Clay County, after proving dry in the Ellenberger at 5975-6100 feet. String of 4½-inch pipe is cemented at 5982 feet to perforate opposite promising saturation logged in upper portion of Mississippian, topped at 5622 feet.

Ask 40-Acre Spacing For Alta Mesa Field

Standard Oil Company of Texas has requested 40-acre spacing for wells in the Alta Mesa field, Brooks County. At a hearing before the Texas Railroad Commission recently, the company asked that the 20-acre pattern be abandoned to allow wells at greater distances. No operator opposed the program.

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Southwest Texas

Deep Pay Near at McCampbell; New Gas Field in Calhoun

Deeper production loomed as a test was under way in Baytex Oil Corporation and Atlantic Refining Company's McColloch 2, Block 14, of the McCampbell field, Aransas County. Drilled to 10,497 feet, 5½-inch liner was set on bottom, and perforations made at 10,200-10,235 feet where electric log indicated producing sands.

A gas field was opened in Calhoun County with completion of Gulfboard Oil Corporation et al's State 1, in Tract 177, Nueces Bay. The hole had been drilled to 6406 feet in Marginulina but was plugged back after a series of tests failed to produce. Perforations at 2880-85 feet resulted in several million cubic feet of dry gas. Sand was encountered at 2880-2933 feet. The well had been drilled by O. W. Dyer of Houston. It is 10 miles southeast of Seadrift.

Ahern & Moore's Janica-Toney 1, two miles southwest of production at Ganado, Jackson County, failed to encounter production in either the 5100-foot or 6450-foot zones. The Texas Company was completing a third producer in the new deep pay in this field, this being a northeast outpost to production.

McFaddin field, Victoria and Refugio counties, was defined with the abandonment at Norsworthy et al's Fagan 2, at 5665 feet. The well is at southwestern end of production.

Production test was still underway in Southern Minerals Corporation's Boenigl, a ¾-mile northwest extension to the Woodsboro field, Refugio County. The well was making an estimated 175 barrels per day through ⅛-inch. Pressures were 1160 pounds on tubing and 2085 pounds on casing after perforations were made 5880-85 feet. It would provide a second producer for the field as well as a major extension.

Southwest Texas' Wilcox trend gained further impetus with a Cockfield sand strike on a structure primarily classified as a possibility in the lower zone. This would further enhance the value of other structures in the deep category.

W. R. Davis' Brownson 1-B, at Garwood, Colorado County, cored oil sand 6102-10 feet and oil and salt water sand at 6110-12 feet. Hole was drilled to 6310 feet and casing set for completion. Drill-stem test recovered 1150 feet of 43-gravity clean oil under 147 pounds working pressure in 10 minutes. Closed in, bottom-hole pressure built up to 2650 pounds. The well is 2650 feet northeast of the discovery Wilcox producer of the Garwood field, which recently was completed at 9325 feet. It is 2 miles southwest of the several tests on the main Garwood structure which made some oil from the Cockfield zone, but which were abandoned.

In Live Oak County, Edwin M. Jones' George West 3-B was drilling out bridges near 6500 feet. It had been sunk to 9036 feet, blew out, ran wild and burned. It wrecked derrick and equipment, but was shut in. New high-pressure equipment was installed, preparations now being made to carry the hole deeper. This is the second blowout in a wildcat on the Live Oak County structure.

Duval County gained another important Loma Novia sand discovery through completion of Bridwell Oil Company's Escapole 1-B in sand at 3204-12 feet. The well flowed from 20 to 25 barrels of 29-gravity clean oil per hour through ¼-inch choke. The casing pressure ranged from 380 to 400 pounds during test, but tubing pressure was not gauged. The well provided an extension of nearly 1½ miles to the southwest of the Keis field of Duval County by the completion of the area's second well.

Bridwell has obligations to drill at least four wells on the block of 1100 acres. The test was drilled under contract by Gorman Yoakum.

Rincon field of Starr County received two definitions in production with the abandonment of as many wells. Continental Oil Company's Slick 21-A, southeast extension area, was stopped at 5390 feet. W. C. Davis' Davenport 1-C, 5 miles southeast from production and in Section 920, quit at 5508 feet.

Propose Cycling Plant for West Tuleta Field

A recycling plant and development of the 7500-foot Transition-Carrizo zone in the West Tuleta field, Bee County, Texas, are apparent with communitization of 4000 acres on that structure now underway. Phillips Petroleum Company has announced its intention of exercising an option on the producing properties in the field as soon as operators complete the unit arrangement.

Several months ago, Phillips Petroleum Company made an agreement with leaseholders in the district to test the only deep producing well on the property and to make a geophysical survey. The tests proved satisfactory, and the company has agreed to commence a 7500-foot well within 30 days after conclusion of the unitization. Under the contract, the company would drill six wells, commencing each 45 days or less after the conclusion of the preceding well. Also, the company would build an adequate recycling plant. The company, however, reserves the right to withdraw from the deal at any time, retaining only so much interest as it has earned by the development.

The transaction further includes placing the discovery into the unit, with Phillips Petroleum Company having full operating rights. Owners of present properties would be reimbursed for all of their financial outlay; that is for the past development and the company would receive reimbursement for its future development. Later, two-thirds of the distillate production's net proceeds would go to the company, as would one-half of the crude production. The remainder would go to the present lease holders.

Those already in the deal are Anderson-Prichard Oil Corporation, Mills Bennett Production Company, Pettus Refining Company, Phil Gulley and Dirks Brothers.

Anderson-Prichard Oil Corporation and Mills Bennett Production Company opened the deep sand in this area with completion of Robinson 2, Section 6, in April of last year. It made a large gas and distillate producer through perforations 7525-35 feet.

The development is considered of much importance, as it may provide considerable information as to producing problems of the sands of the Wilcox trend of Southwest Texas.

Plan Four Cycling Projects In Southwest Texas Fields

Expansion of Southwest Texas cycling-plant construction is anticipated with two more plants in prospect. Two more announced projects bring the total immediately contemplated to four.

A series of tests are determining the reserve qualities of the Parr ranch hold-

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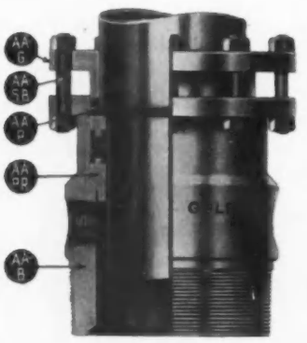

This head is used where there is a possibility of a blowout while setting the bottom hole string of casing. The lower packing and packing rings are of one piece construction and are latched around the pipe and set as a unit. At the first sign of a blowout this packer can be set.

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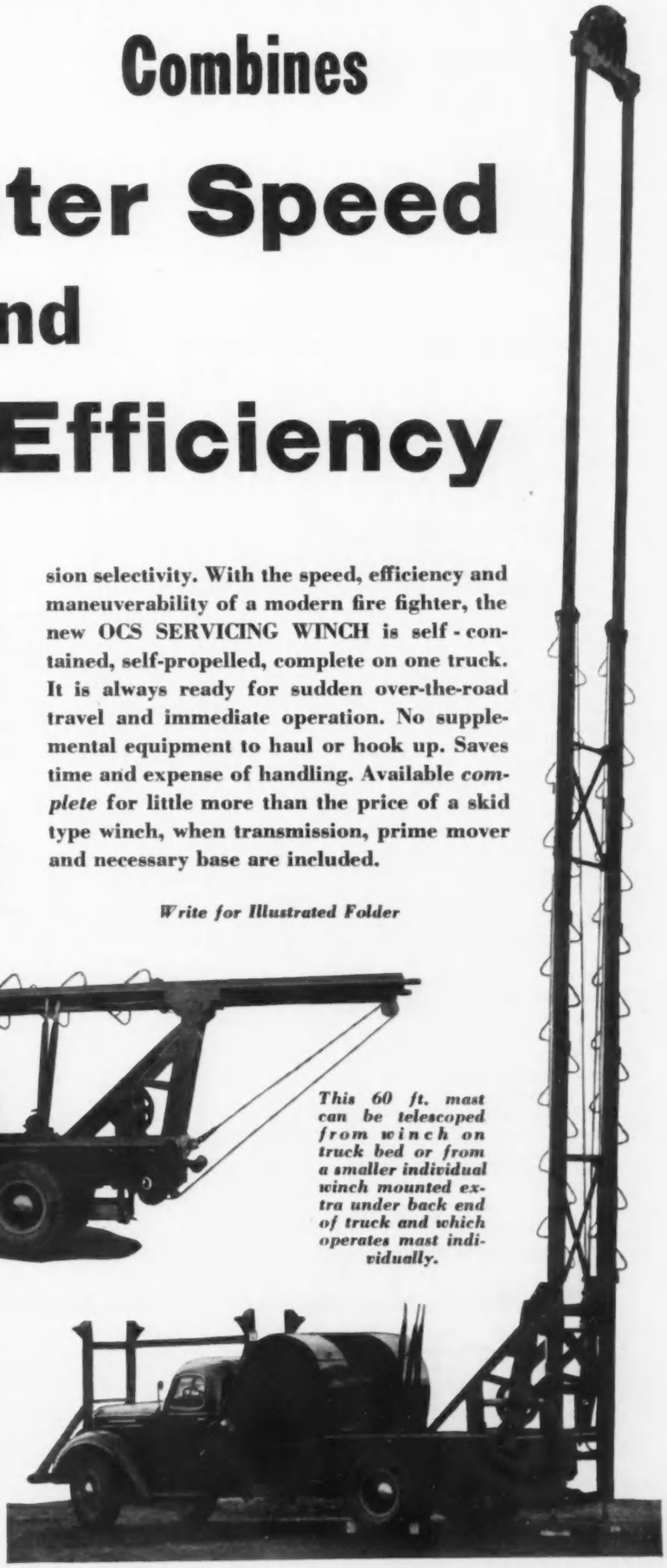

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ings of Benedum & Trees Oil Company east of Benavides in Duval County. Several distillate sands through the Jackson and Cockfield zones are productive in the area east of the North Sweden field and these pays will be produced through this method.

W. R. Davis, Inc., has started the first well on the McAllen structure in Hidalgo County. Several tests are contemplated, following which a cycling plant is proposed. The sands range down to 7500 feet.

Plans already have been announced by Champlin & Bass, Inc., for a plant and development of the condensate reserves of the Sejita field, Duval County, while H. B. Zachry Company is to immediately build a plant in the Francitas area of Jackson County.

Texas Gulf Coast

West Conroe Field May Have First Oil Well

Housh & Thompson may provide the first commercial oil production from the West Conroe field, west of Conroe, Montgomery County. Clary 2, 900 feet southeast of an old discovery gasser which was completed from Cockfield sand in November, 1938, making gas with a little salt water and oil from 4739 feet, was preparing to make confirmation production test from Cockfield sand at 4728-34 feet. On drill-stem test with packer set 2½ feet off bottom it showed 660 feet of oil and 70 pounds pressure in 6 minutes. Seven-inch casing was run to bottom. Operators will perforate in the lower two feet.

At Lakeview, Montgomery County, Superior Oil Company finished a fishing job in McWhorter 2, and was drilling below 7700 feet. It still had about 1600 feet to go to the Wilcox pay, from which the discovery is producing. The company also extended the Fannett field, Jefferson County, by completing Bordages 1 through perforations at 8376-86 feet for 229 barrels daily through a 9/64-inch choke with tubing pressure 1350 pounds and gravity 38.4 degrees. It had drilled to 10,592 feet before coming back to the regular upper Frio pay.

Off the Jefferson County coast, British American et al have announced a new location for the Sabine Pass field. Bottom of hole is to be just 800 feet southeast of the discovery, in Tract 72, but it will be drilled from the same platform as the discovery.

Another test was being made in Davis & Company's Hortman 1, at Lakeview, Wharton County. It showed water at 4536-40 feet, and then perforated at 3411-16 feet for a test of Miocene sand. This test showed 1000 pounds pressure in 14 minutes, and recovered 400 feet of mud with an oil odor. It squeezed and was preparing to perforate in the same sand, at 3417-19 feet. Side-wall cores showed saturation in this upper sand.

West Columbia field, Brazoria County, will attract interest while S. W. Richardson's Holmes 2 makes tests of a deep sand, below pay found in other wells on the north flank. The test was drilled to 8500 feet, and set casing to bottom. Operators were withholding details, but have indicated that showings were found in deep sands. This is now the deepest test on the dome, deepest previous well being around 7000 feet, drilled by General Crude Oil Company.

In the Garwood area, Colorado County, Davis & Company decided not to go to the Wilcox in Brownson B-1, ¾ mile northeast of the deep Wilcox discovery in this area. Operator set a string of 7-inch casing, instead, to 6161 feet, one foot off bottom, and was testing Cockfield sand at 6102-14 feet that showed 1150 feet of oil on a drill-stem test. It will be deepened in the event this sand fails to produce satisfactorily. Squeeze jobs are being made to cut off foreign sands before making production test.

Superior Oil Corporation made location for a new wildcat in northwest Orange County, several miles north of Beaumont. East Beaumont Townsite 1 is 922.3 feet east and 486 feet north of the southwest corner of the Nancy Davis League. It will drill to 7000 feet, and possibly deeper, with Manahan Drilling Company as contractor.

J. H. Woodard, Jr., has made location for an 8500-foot wildcat on Bolivar Penninsula, in the John Shaw Survey. It will be eight miles east of Port Bolivar and seven miles west of the Caplen field. Kahla Estate 1 is just south of the intercoastal canal.

West Production Company and Humble Oil & Refining Company's Abell 1, south of the Mykawa field, northern Brazoria County, drilled to 6929 feet without finding shows of oil or gas, and was abandoned.

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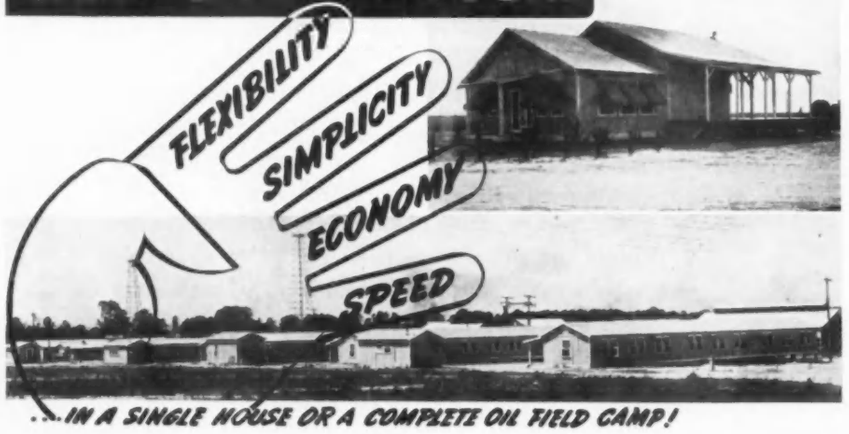

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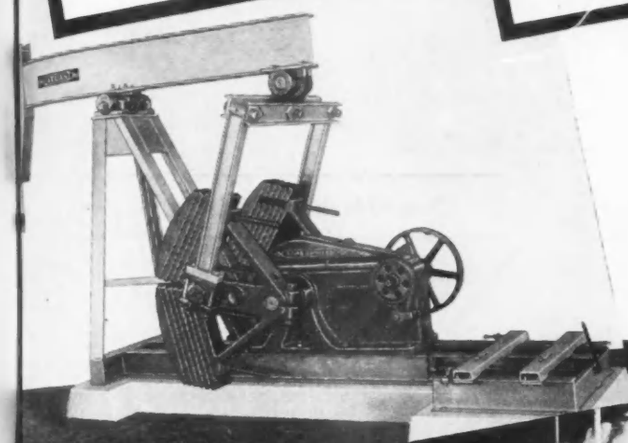

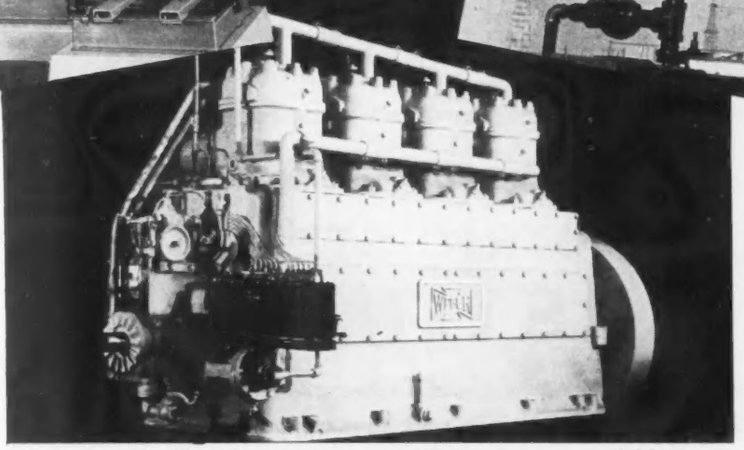

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Louisiana Gulf Coast

Anse La Butte Extension Tests Oil in Deep Sand

W. R. Davis & Company's 1½-mile east extension test to the Anse La Butte field, St. Martin Parish, was preparing to set production pipe after testing 7,640 feet of pipe-line oil on a drill-stem test of a new deep sand at 9427-43 feet. The test was taken with packer at 9433-49½ feet, was 15 minutes long, and used a 1000-foot water cushion through ¼-inch chokes on top and bottom. Total depth is 9449½ feet.

The operator drilled and cored to 9442 feet in oil sand, topped at 9427 feet, and tried two drill-stem tests, but because of the softness of the sand section the packers did not hold. Then a five foot core recovered all shale. The bottom 6½ feet of hole is shale. This new pay probably is in the top of the Hackberry formation, or in the lower Marginulina. Location is near the company's first test on this flank, Voorhies 1, abandoned at 8966 feet after several tests near the bottom showed only little gas.

I. N. Pharis' flank test on the north side of the dome had casing set below 6000 feet for production tests to be made through perforations. Total depth is 6118 feet in salt, topped at 6060 feet. Tests probably will be made of sand at 5398-5407 feet.

Gulf Refining Company topped salt at 2969 feet in its Bay Marchand wildcat in the Gulf of Mexico, approximately 4600 feet higher than any other well drilled in the area. Test is about 1¼ miles in the Gulf of Mexico from the shore in LaFourche Parish. Other wells drilled in the area were on the mainland, and had top of the salt at about 7500 feet. Latest test indicates top of the salt dome is farther south and east than previously believed. The 5½-inch casing has been set at 2953 feet, and production tests will be taken of oil shows above the salt top.

Salt water encroachment has started in Phillips Petroleum Company's test in the Erath pool, Vermilion Parish. Testing through perforations at 11,618-620 feet, a new deep pay about 200 feet deeper than the discovery sand, the test started making water after several days of cleaning. It was first tested on a small choke making gas with pressure about 4000 pounds on casing and tubing, and a small flow of oil and water. Cause of the water, reported to be coming from the bottom, is due to a bad cement job.

On the Leleaux prospect, near the Acadia-Vermilion Parish line, Cities Service Oil Company's Homeseekers 1 was nearly 10,000 feet, with no shows reported. Contract depth is 10,500 feet.

Chamblee & Pitts spudded a wildcat scheduled to test the Wilcox zone in the South Catahoula area, Rapides Parish. It is Lee Lumber Company 1.

Stanolind Oil & Gas Company spudded a wildcat in the Southdown area, Terrebonne Parish. The test probably will be drilled to about 11,000 feet, and is located about 3600 feet north of a dry hole drilled by Shell Oil Company to below 10,000 feet. It is Realty Operators 1.

Gulf Refining Company's deep test on the Lapyrouse prospect, Terrebonne Parish, was nearing 10,000 feet, with no shows encountered.

Located 700 feet northeast of a new deep pay producer on top of the dome in the Gueydan field, Fohs Oil Company abandoned Mulvey 5 in salt, topped at 5388 feet. Total depth was 5393 feet. The Pure Oil Company's new producer on the south flank showed over 300 barrels daily from the 9700-foot zone.

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A long string of protection casing has been landed in Humble Oil & Refining Company's deep wildcat at Bayou Sale. The test, Marin 1, landed pipe at 10,940 feet with a corrected depth of 10,941 feet, and probably will be deepened to 12,000 feet. It will test the 11,800-foot producing sand at Horseshoe Bayou, which is five miles south of the Marin 1.

Louisiana Permits

Forty-nine drilling permits were issued last week by the Louisiana Department of Minerals, of which 19 were in North Louisiana divided among the following parishes: Bossier 3, Caddo 4, Catahoula 1, LaSalle 6, Natchitoches 1, Ouachita 1, Sabine 2, and Union 1. The 30 in South Louisiana were in the following parishes: Acadia 1, Avoyelles 1, Beauregard 1, Cameron 1, Evangeline 5, Iberia 2, Iberville 1, Jefferson 1, LaFourche 1, Orleans 1, Plaquemines 3, Rapides 1, St. Martin 6, St. Mary 3, Terrebonne 1, and Vermilion 1.

Arkansas Permits

Three drilling permits were issued last week by the Arkansas Oil and Gas Commission, as follows: Columbia County—Robert A. Stacy and Delta Drilling Company's Martel Unit 1, C SE SW 10-18-22; Nevada County—Benedum & Trees Oil Company's Ritchie Grocery Company 1, NWc 11-14-20; Berry Asphalt Company's W. E. Meadows 2, NWc NW SW 4-14-20.

North Louisiana

Consider Going Deeper in 10,003-Foot Wildcat Hole

Herman Brown and Lide & Greer's Arkansas-Louisiana Gas Company 1, SW NE 11-17n-4w, at Grambling, Lincoln Parish, a wildcat, was temporarily abandoned at 10,003 feet as operators discussed plans for deepening.

At Lake Bisteneau, Arkansas-Louisiana Gas Company completed Carter A-1, NE SW 13-16n-10w, after perforating at 4981-5086 feet, making 66,500,000 cubic feet of gas. One other test is drilling in this field.

In the western part of the Olla trend, H. L. Hunt secured geophysical option from Bentley Lumber Company on 77,000 acres in Natchitoches, Rapides and Vernon parishes. If acreage is retained a test must be drilled 500 feet into the Wilcox by January, 1942. In Natchitoches Parish, Albert Pate leased 1000 acres from G. H. Pierson in township 8 north, range 6 west.

On the east end of the Olla trend, Louark Producing Company and Phillips Petroleum Company secured five-eighths interest in 7750 acres of Herschell R. Scivally's block in Catahoula Parish, where the latter recently made location but across the LaSalle Parish line for a 5500-foot test.

West of the Lisbon field, Claiborne Parish, and far enough down structure to have producing possibilities in the Lower Marine or Smackover lime, J. W. Haley is leasing around Section 8-20n-5w.

In LaSalle Parish, Arkansas Fuel Oil Company secured 1200 acres in township 9 north, ranges 1 and 2 east, for a test to start by July 15. The same company is negotiating with Urania

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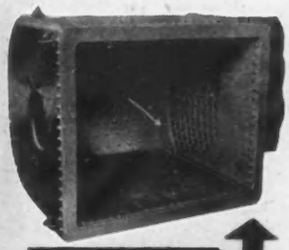

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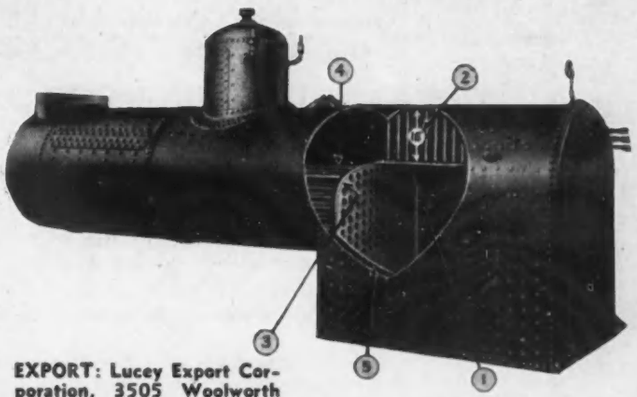

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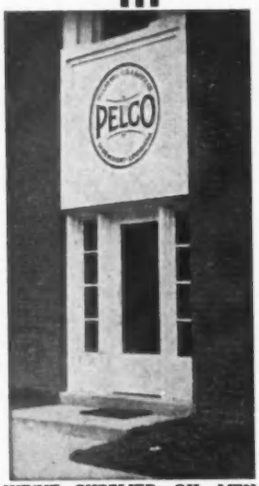

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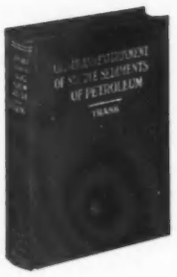

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Lumber Company for acreage in township 10 north, range 2 east. In Richland Parish, Southern Carbon Company leased 700 acres around Section 18-14n-5e. In Tensas Parish, Sun Oil Company leased 1000 acres in township 11 north, range 9 east.

Big West Drilling Company made location for a wildcat in the Olla Trend in SE NE 36-12n-3e, Caldwell Parish. North of production in the shallow Bellevue field, Bossier Parish, George D. Stevens made location for a test in SE SE 29-20n-11w.

Arkansas

Jefferson County Wildcat Has Shallow Oil Show

A showing of oil at a shallow depth in a Jefferson County wildcat, the checking high of a smackover lime Columbia County wildcat, and completion of a well from a stray sand in the Schuler field, Union County, featured activity last week in Arkansas.

In Jefferson County, Patterson & Patterson reported a showing of oil at 1359-69 feet in Stratton 1, SE NW NE 35-6s-9w, near Pine Bluff.

In the Fouke area of Miller County, which has proven lenticular in the Paluxy, Carter Oil Company's Sturgis B-1, SE SE 2-17-27, a half mile southwest of nearest producer, showed 330 feet of oil in a 15-minute drill-stem test at 3584-97 feet and cored ahead at 3636 feet; elevation is 313 feet.

Phillips Petroleum Company's Warnock 1, SW NW 1-17-20, Columbia County deep wildcat, in a core at 7435-7452 feet, with 11-foot recovery, showed 3½ feet of hard lime and 7½ feet of slightly permeable lime with hard streaks and slightly porous with a faint sulphur odor and salty taste. However, this test topped Buckner at sub-sea depth of 6966 feet, 38 feet higher on this marker than Standard Oil Company of Louisiana's test 1¼ miles north. Phillips Petroleum Company's test topped Smackover at sub-sea depth of 7106 feet, 177 feet higher than Standard Oil Company's test and topped Reynolds lime at sub-sea depth of 7136 feet, 161 feet higher than this marker in the other test, which was a failure.

In Union County, Schuler field, Roberts & Murphy's Leona 1, Lot 6, SW 7-18-17, picked up a stray sand at 6900 feet, between the Morgan (Travis Peak) and the Jones (Lower Marine) sands, that was found productive, being good for 135 barrels daily. Old total depth is 7660 feet. As this is thought to be a lense in the upper series of the Lower Marine it probably will not cause many new operations to be drilled.

Mississippi

Wildcat Showings Revive Interest in Leasing

Showings of oil recently in three widely separated wildcat tests in Mississippi—in Clarke, Grenada and Sharkey counties—has given some renewed life to leasing development in Mississippi which had dropped to a low ebb following the widespread leasing campaign

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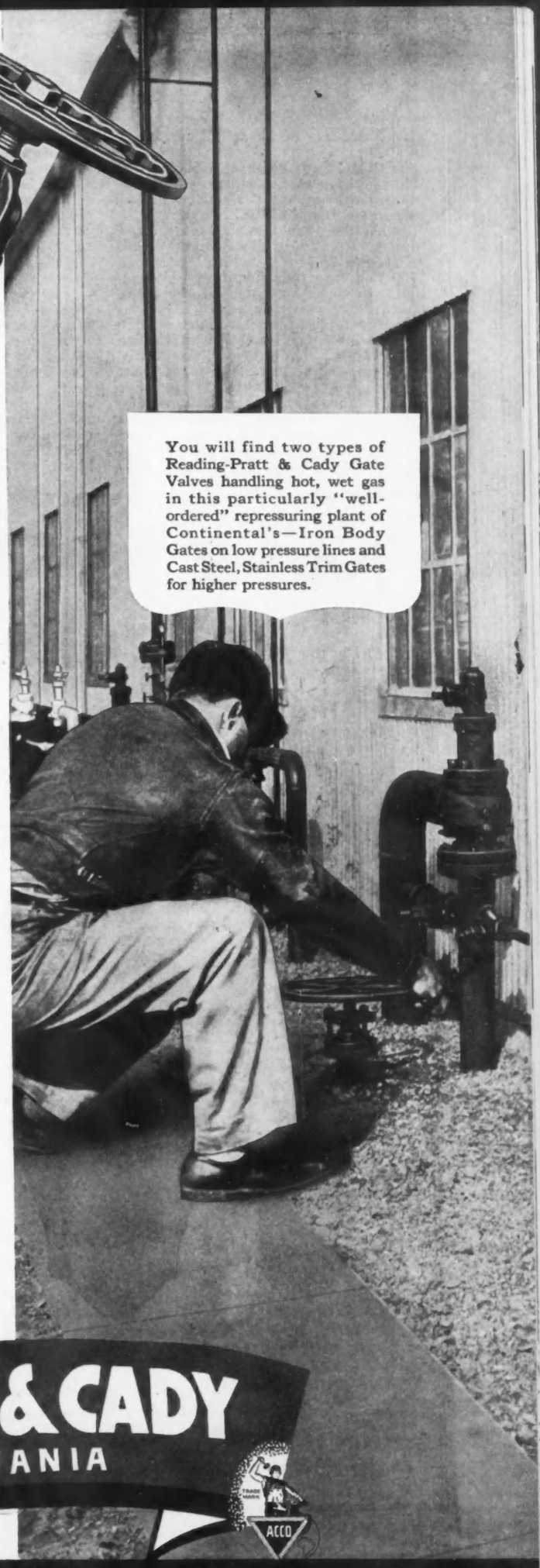

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after discovery of oil at Tinsley Dome in 1939.

With none of the three wildcats that logged the oil shows yet tested, the renewed leasing was particularly noticeable in south and central Mississippi.

In Attala County, where Hawkins & Matthews drilled a dry hole at Weeks 1, Section 29-15n-9e, which penetrated 1100 feet into the Tuscaloosa (Woodbine) another test north of the abandoned location is planned.

Considerable leasing is under way in Township 2 north, Range 4 west, Copiah County, with Tide Water Associated Oil Company securing the major part of the leases. In Covington County, five miles southwest of Collins in Township 7 north, Range 16 west, Humble Oil & Refining Company is taking leases. In Harrison County southeast of McHenry, Victor Pringle has leased over 1000 acres around Section 35-4n-11w. In Township 5 north, Range 3 west, Hinds County, Sun Oil Company and Lion Oil Refining Company are leasing. The latter is leasing near Sallis, Holmes County, in Township 15 north, Range 5 east. Humble Oil & Refining Company is taking some scattered leases in Township 10 north, Range 13 west, Jasper County. Amerada Petroleum Corporation is adding to its block in Township 8 north, Range 4 east, Jefferson County.

In Jones County, Tide Water Associated Oil Company is leasing in Township 6 north, Range 13 west and in the same county, Union Producing Company is dropping acreage.

John Hontzas has made tentative location for a 6000-foot test in Section 25-2n-7e, Pike County, on a 5000-acre block, spudding date being October 1.

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Shell Oil Company secured geophysical option on a block in Township 6 north, Ranges 4 and 5 east, Rankin County.

H. Avery made location for a wildcat test, A. P. Cameron 1, SE NW 33-14n-6w, on a 7000-acre block. Southwest of Tinsley Dome, Yazoo County, R. T. Sellars leased Section 16-9n-3w, from the state for a Woodruff-sand test by August 15 and assigned part of the acreage to Fred Edom who will drill the test. Southwest of Tinsley Dome, Normandie Oil Company leased 72 acres in Section 1-9n-3w.

Stanolind Oil & Gas Company and Southern Natural Gas Company have taken spreads in Reason & Ellis' block in Winston County, Alabama, where the latter have made location for a test at C NW NW 19-9s-10w.

In Lamar County, near Baxterville, Freeport Sulphur Company made location and spudded the first of three shallow tests seeking possibly sulphur production on a salt dome discovered there several months ago by Wilmut Gas & Oil Company. Location for the first test is Tatum 1, located 2271 feet south and 1348 feet west NEc 14-12n-16w.

From recent tests drilled in the southeast part of the Tinsley Dome field, it appears that the water level there is 4728 feet subsea, which gives a 12-foot section of saturation. Estimates of recovery there are now 500 barrels per acre foot of saturation.

Rocky Mountain Area

Prepare 8500-Foot Test on Bunker Hill Structure

Superior Oil Company of California was preparing for an important deep test of the Bunker Hill structure, three miles northeast of the active Wertz field, Carbon County, southcentral Wyoming. Location will be in the NW NW NE 32-27n-89w. The test will be drilled to the Tensleep section, with contract calling for 8500 feet. The company has acquired the oil and gas operating rights to the deep sands underlying 4000 acres at Bunker Hill from R. D. Wallace, Casper, and George E. Brimmer and Clarence A. Brimmer, of Cheyenne and Rawlins. The Ohio Oil Company holds operating rights to the upper sands, and has completed two gas wells and one failure on the structure. Bunker Hill dome is on the Lost Soldier line of folding, and is a clearly defined structure with 900 feet of closure. The Tensleep test will be interesting in view of the large wells completed in the Wertz field immediately southwest, where producers ranging from 2000 to 6000 barrels initial have been completed during the past several months.

The Mountain Fuel Supply Company was building derrick for a test in the north extension area of the east Hiawatha field, on the Sweetwater County, Wyoming, side of the Tertiary oil and gas structure. Newberger 2-B is in the SW NW NW 18-12n-99w, midway between Mountain Fuel Supply Company's Newberger 1 and Vermillian Oil Company's Amelia Horrocks, SW SW SW 7-12n-99w. The Vermillian test, ½-mile north of the new location, completed at the close of 1940 for 12,000,000 feet daily at 3540 feet. It registered a rock pressure of 12,000 pounds, the highest on record for wells in the area. Whether

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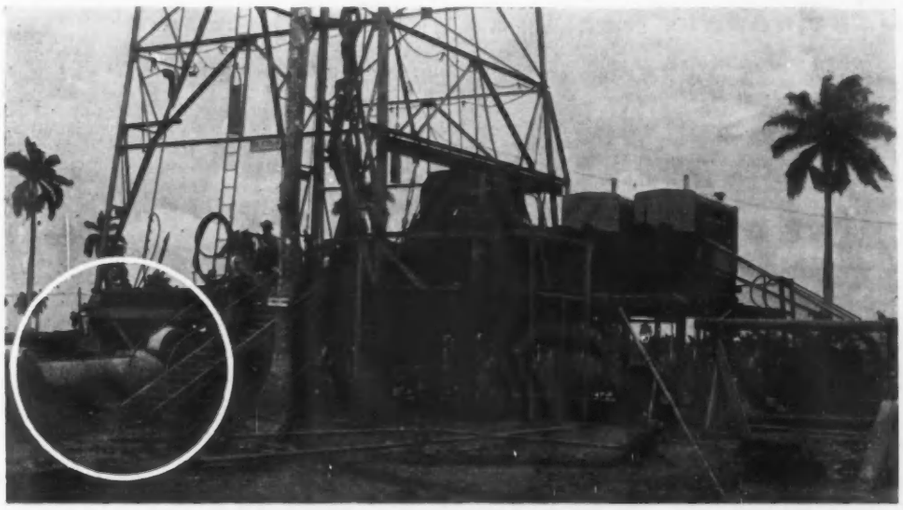

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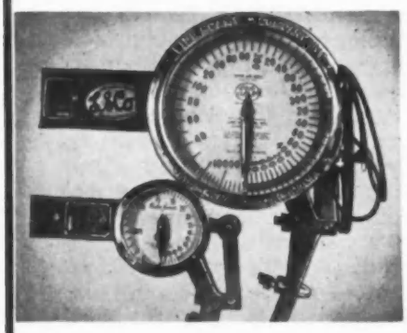

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the Vermillian test is an extension to Hiawatha, or a discovery on the south flank of a possible structure to the north of East Hiawatha, is in contention. The Mountain Fuel Supply test may give the answer.

Near the crest of the East Hiawatha field, Mountain Fuel Supply Company was moving in for Florence Wilson 8, CSE NE 22-12n-100w.

General Petroleum Corporation spotted location for a ¼-mile south extension test of the Cole Creek field, 13 miles northeast of Casper, Natrona County, Wyoming, Nicolaysen 31-27-P NE NE NW 27-35n-77w. The company has a program of nine wells to drill during 1941 at Cole Creek, and contemplates completion of a well to the Shannon sand at around 4600 feet every 25 days. Manning & Martin, Inc., Denver, has contracts for the Cole Creek test.

On the East Allen Lake Gas structure in Carbon County, Wyoming, Medicine Bow Oil Company (Mrs. P. J. Quaily, Joe Minton et al) were moving in rotary equipment for Richards 1, NE NE 18-22n-78w, which will drill to the Tensleep sands. On Allen Lake proper in 1938, The Ohio Oil Company had water in the Tensleep sands in Hazlett 3, NW SE NW 34-23n-79w at 4362 feet.

Michigan

Monroe at 4275 Feet May Produce in Adams Field

A new producing horizon for the Adams field, Arenac County, was indicated last week with Don Rayburn's Fox 1, NE NE SE 21-19n-3e, carrying 1500 feet of oil in 6-inch hole on an eight-hour test. Production is from the Monroe at 4275-85 feet, the zone commonly referred to as the Tuscola Monroe. Rayburn planned to make a production test before proceeding with original plans to penetrate the Sylvania sand, expected between 5900 and 6100 feet.

Fox 1 is ½ mile west of Dundee (2820 feet) production in the north Adams pool and a mile south of The Pure Oil Company's recently abandoned State 2, Section 15-19n-3e, which was under test for 15 days at 4299 feet but finally junked. State 2, first test drilled in the Adams field below the Dundee section, carried oil in the Tuscola Monroe. It was acidized twice, with peak recovery about 5 barrels a day with 4 to 8 barrels of water.

Gulf Refining Company made comparatively little new hole during the week on Bateson 1, Section 2-14n-4e, Bay County, going from 7185 to 7308 feet. Test was drilling in hard lime and anhydrite in the diverted hole with an average of 25 to 35 feet per 24 hours. Hard formation and heavy drilling mud required to hold back gas has made slow going. At the present time, 15.8-pound mud with a viscosity of 50 is being carried. Rock bits are being changed on an average of every 25 feet.

An important extension for the Dundee producing horizon in Bay County was opened with Chapman Oil Company's Nitschke 1, Section 33-15n-4e, Kawkawlin Township, pumping 190 barrels the first 24 hours after acid treatment. The well is ¾ mile northwest of previously drilled producers in the field.

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doned Skidmore 1, Section 9-16n-16w, Oceana County, wildcat that had been under test since January as a possible Traverse pool opener. Attempts to shut off water that was cutting the oil were unsuccessful.

Sun Oil Company was successful in a plug-back operation on State B-1, Section 5-19n-6w, a mile south of produeing wells in the Winterfield pool. Test was carried to 3808 feet, but failed to show in the Dundee. It was then plugged back to 3150 feet and acidized to a saturation zone in the Traverse, with recovery the first week indicating an average pump yield of 60 to 70 barrels per day.

California

Fresno Wildcat Looks Good At 4754 Feet, Deepening

After recovering interesting showings in formation test at 4697-4754 feet, Shell Oil Company's Properties Incorporated 8-18, wildcat in Section 18-15-18, Kerman area of Fresno County, was being deepened below 4985 feet, expected to go to the Eocene. On formation test, with valve open 50 minutes, the test had strong blow of gas with recovery of 3600 feet of fluid in pipe, including 730 feet of 23-gravity oil, plus gassy mud and a small amount of water.

Earlier wells drilled in this general area obtained oil and gas showings, but were too wet for commercial production. Therefore, commercial possibilities of Properties Incorporated, so far cannot be conceded despite encouraged indications given by test. In addition to Shell Oil Company holdings in area, substantial acreage is also held by General Petroleum Company, Union Oil Corporation, Tide Water Associated Oil Company, Seaboard Oil Corporation, Richfield Oil Corporation, Barnsdall Oil Company, The Texas Company, Universal Consolidated Oil Corporation and Signal Oil Company.

Chanslor-Canfield, Midway Oil Company's Hobson C-9, deep test in Section 17-3-24, Rincon field, was drilling in hard brown shale and oil sand at 8639 feet. Test is regarded as having proven a new producing zone at 7539-8073 feet, while entire zone from 7539 to present bottom looks good. At 8614 feet gas pressure required 90-pound mud. Operator is expected to continue coring to around 10,000 feet before attempting production.

In the Pixley area of Tulare County, Continental Oil Company has filed scattered leases in Sections 3, 14-23-25; 27-22-25, and 31-22-26, where a possible overlap play has been noted. It is also reported that two other large operating units have recently acquired acreage in this area.

Standard Oil Company's first deep test, L. A. Investment 3-1, in the Inglewood field where a new deep zone was brought in earlier this year, has been bottomed at 10,598 feet in hard shale and gray sand and plugged back to 8924 feet. Production test through perforations at 8583-8700 feet brought 10,000,000 feet of gas with a small yield of condensate. Test is currently making 1,500,000 feet of gas through a 1-inch bean, together with about 10 barrels daily of condensate. Interval perforated is equivalent to the Bush-Sentous zone.

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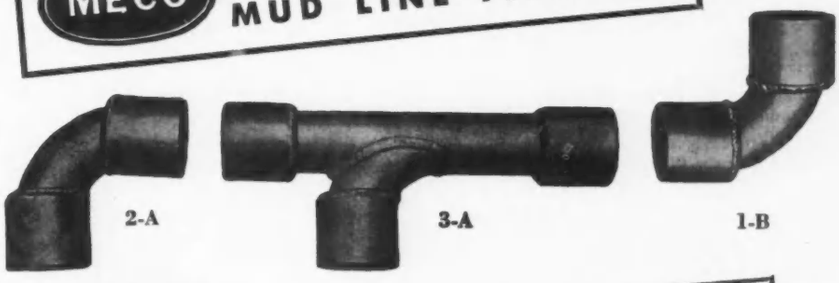

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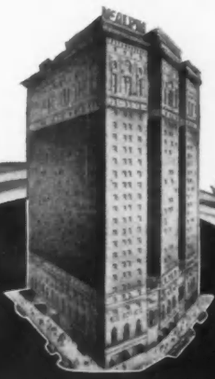

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UNITED STATES WELL COMPLETIONS

Arkansas

Company, Well and Location	Init. Prod. Bbls.	Depth
Columbia County (Stephens)—		
M. D. K. Fitzwater et al, Smart 1, 14-15-12o	79	3434
Union County (Schuler)—		
Roberts & Murphy, Leona 1, 7-18-17	135	7660

California

Company, Well and Location	Init. Prod. Bbls.	Depth
Fresno County (Coalinga Eocene)—		
Robert S. Lytle, No. 8-18F	2250	7800
Superior, Cagle B-9	1305	7687
Kern County (Coles Levee)—		
Richfield, KCL B-83-31 (pb 8900)	465	8980
Kern County (Mount Poso)—		
J. J. Tavis, No. 1	*	1754
Kern County (Midway Sunset)—		
Marvic Associates, No. 1	60	965
Kern County (Rio Bravo)—		
Superior, Pasadena Realty No. 4	1560	11,455
Kern County (Ten Sections)—		
Shell, KCL A-27-29	1963	8235
Los Angeles County (Brea Olinda)—		
Fullerton Oil Co., No. 9	100	4000
Los Angeles County (Dominguez)—		
Shell, Reyes 113	472	4265
Los Angeles County (Long Beach)—		
Panora Oil Co., W. A. 11	115	4402
Shell, Cresson Comm. 16	93	3440
Los Angeles County (Wilmington)—		
Interstate Invest. Corp., Harbor 4	170	3195
Union Pacific, UP 175	42	5410
UP 181	151	2835
Wilforth Oil Corp., No. 1	125	3710
Wilton Oil Co., No. 11	147	3719
Orange County (Olive)—		
Tide Water, Olive-Orange 1	*	4510
Santa Barbara County (Capitan)—		
Shell, Covarrubias 1-31	1152	1350
Santa Barbara County (Santa Maria Valley)—		
Union, Mallory 4 (pb 5200)	147	5285
OLD WELLS DEEPENED		
Los Angeles County (Seal Beach)—		
Continental, Bixby 45 (otd 4690)	205	5516
Los Angeles County (Wilmington)—		
Atlantic Oil Co., No. 4 (otd 3600)	130	5715
Union Pacific, UP 37 (otd 3110)	86	3577
Ventura County (Ventura Avenue)—		
Tide Water, Hartmann 25 (otd 7407)	205	7507

*Failures; †Junked; ¶Million cu. ft. gas.

Illinois

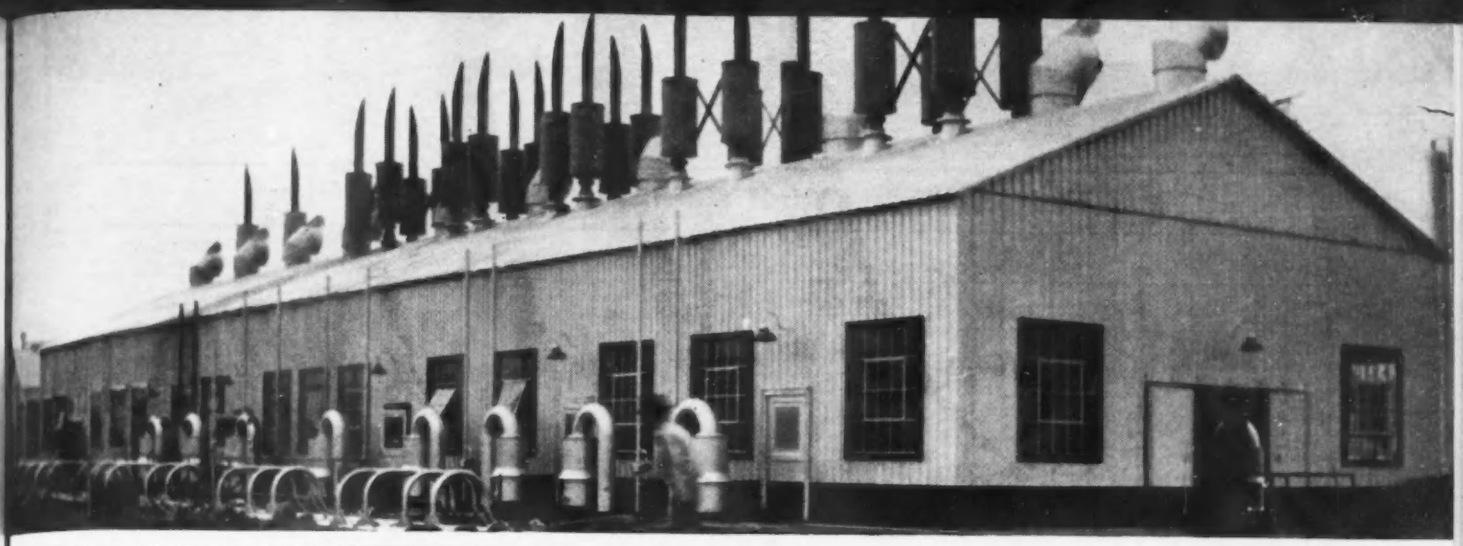
Company, Well and Location	Init. Prod. Bbls.	Depth
Bond County—		
Regent Oil Corp., Harwood 1, se nw nw ne 6-6n-3w	*	820
Clark County—		
Sherritt et al, Jeffers 1, se ne se 31-11n-13w	*	1710
Clinton County—		
Kreigh, Phoenix 1, sw sw nw 14-1n-1w	*	1452
Fayette County—		
Texas, Neathery 15, c se nw ne 6-6n-3e	40	1588
Carter, Clow 3, c e½ sw ne 15-8n-3e (pb 1523)	354	1545
Franklin County—		
Adkins, Rice 1, sw ne nw 25-6s-2e	550	2126
Rice 2, nw se nw 25-6s-2e	510	2132
Menhall et al, Moore 1, s½ nw 25-6s-2e	300	2147
Shell, Doty 5, sw ne sw ne 25-6s-2e	335	2163
C. W. & F. Coal 1, nw se nw nw 25-6s-2e	368	2131
Bay Oil Co., Franklin Co. Coal 1, se se nw 8-6s-3e	*	2110
Gallatin County—		
Carter, Kuder 4, ne sw se 33-7s-8e	34	1739
Rister 1, ne sw nw 4-8s-8e	4	1720
Fitzgerrell, Doherty 1, sw nw nw 24-8s-9e	*	1955
Egyptian T. & T., Fee 4, ne ne se 16-8s-10e	205	2074
Hamilton County—		
Rockfield O&G Co., Hook 1, 34-3s-5e	217	3350
Parker, Trobaugh 2, se se sw 27-5s-6e	*	2983
Sinclair-Wyo., Stelle 6, nw ne se 27-5s-6e	15	3059
Ohio, Matheny 9, se sw se 3-6s-6e	168	3082
Texas, Hood 12, nw ne nw 3-6s-6e	73	3052
Lager 1, nw sw ne 10-6s-6e (pb 3040)	*	3200
Edwards 1, nw ne nw 11-6s-6e	80	3052
Cameron Bros. Kern 1, ne se sw 7-6s-7e (pb 2943)	50	3039
Jasper County—		
Pure, Grove 1, e½ nw ne 16-5n-10e	*	2910
Frohning 3, c s½ sw nw 33-6n-10e	100	2835
Conner & Arnold, First Nat'l Bank 1, ne sw sw 1-6n-9e	*	2973
Madison County—		
Sam Pate et al, Rice 1, nw sw ne nw 28-4n-5w (pb 2060)	*	2085
Marion County—		
Shell, Davidson 5, ne sw ne ne 34-4n-1e	213	1367
Swan-King, Cemetery 1, s½ se sw 36-4n-2e	*	2253
Shelby County—		
W. H. Sloan, Cutler 1, sec ne 12-10n-2e	37	1735
Jesse Moore et al, Fee 1, sw sw ne 30-10n-3e	*	1760
St. Clair County—		
Luella, Smith 1, sw sw se 30-3s-6w	*	550
Tazewell County—		
Bartelmay, Mathis 1, nw sw nw sw 24-25n-3w	*	2091
Wabash County—		
Harris et al, Smith 1, nw se se 9-1n-12w	*	2334
Shell, Gillison 1, se nw nw sw 17-1s-12w	112	2072
Highland Comm. 4, ne se nw sw 17-1s-12w	207	2417
Hein 1, ne ne se 18-1s-12w	240	2065
Babler & Hull, Steckler 1, sw se sw ne 18-1s-12w	104	2089
Stroube & Stroube, Mt. Carmel Comm. 3, se sw ne 18-1s-12w	202	2092
E. O. Olds, Fordyce 1, sw se se ne 20-1s-12w	98	2073
Ralph Gilster et al, Seiler Hrs. 1, sw se nw 30-1s-12w (pb 1794)	75	2530
Continental, Seiler 4, c nw ne se 34-1s-13w (pb 1950)	40	2642
Wayne County—		
Pure, Elliott 3, w½ nw se 1-1n-7e	71	3100
J. W. Sanders et al, Stanford 1	108	3070
Hubble 1, e½ sw se 30-2n-8e	1360	3038
Texas, Poorman 9, nw nw se 19-3s-8e (pb 3251)	20	3260
White County—		
Arrow Dr. et al, Hon 4-D c nw sw sw 33-3s-14w	75	2970
Hon. 4-B nwc ne sw 33-3s-14w	100	2815
Buell & Herndon, Bond 9, se sw ne 8-4s-14w	224	2829
Paul Miller, Ford Hrs. 2-A-1, sw sw sw 16-4s-14w	105	2727
Jarvis, Collin 1, ne se sw 22-4s-14w (pb 2618)	24	2966
Superior, Ford 6, c sw nw se 28-4s-14w	285	2845
Ford 10, nw nw se 28-4s-14w	400	2852
Ford 5, ne se nw nw 34-4s-14w	100	2835
Ford 6, nw nw nw 34-4s-14w	160	2735
Ford 7, w½ nw 34-4s-14w	190	2605
Sun, Greathouse 13, sw ne sw 33-4s-14w	225	2731
H. E. Ledbetter et al, Winter 1, se ne se 24-5s-9e	*	3267
Carl B. Anderson, Phillips 1, sw sw nw 24-6s-8e	200	2497
Clint Crosby, Rebstock 1, se ne sw 11-6s-9e (pb 2293)	*	2297
Sinclair-Wyoming-Ohio, Pierce 15, ne nw nw 12-6s-9e	15	2293
Jackson et al, Hamilton 1, sw se sw 13-7s-8e	*	2648

[*Continued on page 188*]

Summary of Drilling Operations in the United States, Week Ended May 10, 1941

	WELLS COMPLETED								*PERMITS FOR NEW WELLS				
	Total for Week	New Wells Drilled for Oil and Gas: Oil Wells	Gas Wells	Failures	†Miscellaneous	Initial Production	Total 1941	Total this Date 1940	This Week	Total this Month	Total 1941	Total this Date 1940	Year Total 1940
Arkansas	2	2	....	....	....	205	57	74	3	3	57	50	153
California	23	21	....	2	....	10,943	393	407	20	20	348	408	1,042
Colorado	....	....	....	....	....	.....	6	3	....	....	....	....	.....
Illinois	70	44	....	18	8	9,128	1,157	1,287	79	79	1,433	1,462	4,532
Indiana	17	10	1	6	....	3,354	179	138	....	....	....	....	.....
Kansas	34	22	1	10	1	32,322	705	606	46	46	697	710	2,048
Kentucky	2	1	....	1	....	100	104	92	....	....	....	....	.....
Louisiana	27	17	2	8	....	2,309	481	584	49	49	578	590	1,658
Michigan	18	3	3	12	....	600	284	473	15	15	282	450	1,093
Mississippi	6	5	....	1	....	4,250	55	61	....	....	....	....	.....
Missouri*	....	....	....	....	....	.....	4	4	....	....	5	.....	26
Montana	....	....	....	....	....	.....	66	51	....	....	....	....	.....
Nebraska*	2	1	....	1	....	166	33	.....	1	1	26	.....	69
New Mexico	9	7	....	2	....	1,600	128	288	7	7	138	277	559
New York	15	11	....	....	4	72	244	405	....	....	....	....	.....
Ohio	16	3	5	7	1	42	549	264	....	....	....	....	.....
Oklahoma	38	20	4	11	3	7,507	715	820	40	40	680	732	1,888
Pennsylvania	52	38	3	3	8	40	779	1,393	....	....	....	....	.....
South Dakota	....	....	....	....	....	.....	....	1	....	....	....	....	.....
Tennessee	....	....	....	....	....	.....	....	7	....	....	....	....	.....
Texas	214	164	5	40	5	99,570	3,333	3,827	277	277	3,930	4,730	11,170
Utah	....	....	....	....	....	.....	....	1	....	....	....	....	.....
West Virginia	6	....	2	4	....	.....	244	194	....	....	....	226	782
Wyoming	1	....	....	....	1	425	37	56	....	....	....	....	1
Total this week	552	369	26	126	31	172,663	9,553	11,036	537	537	8,174	9,635	25,021
Total last week	605	377	42	141	45	168,218	9,001	10,390	551	2,589	7,637	8,995	25,021
Total this year	9,543	6,101	810	2,191	451	2,854,694	....	.....	....	.....	....	.....	.....

* This tabulation includes those states where weekly data are available; figures for Missouri date from August 10, 1940; Nebraska from August 3, 1940.
† Includes old wells deepened, water-intake, gas input, and salt water disposal wells.



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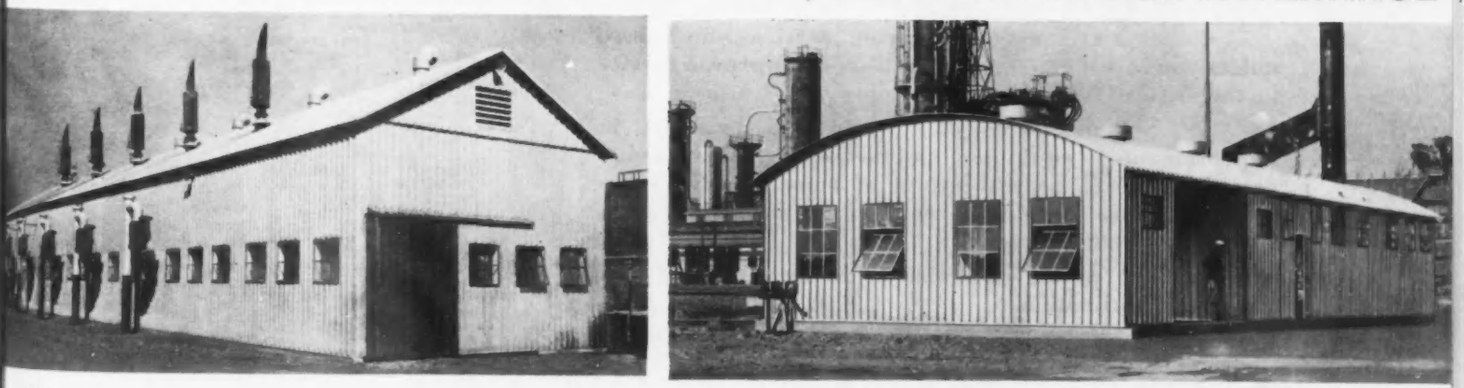

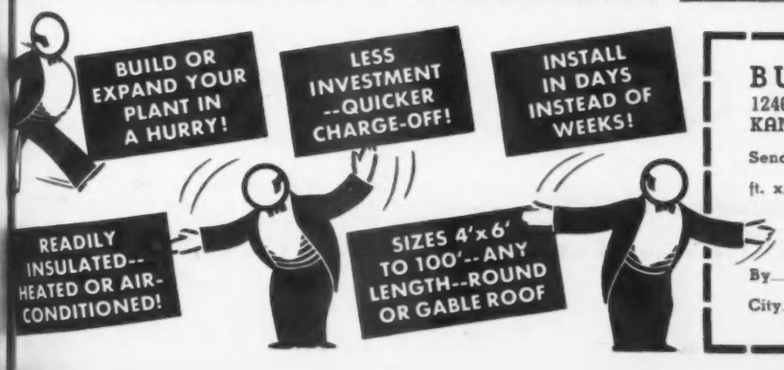
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By Address

City State

United States Well Completions—*Continued*

Company, Well and Location — Init. Prod. Bbls. — Depth

ILLINOIS—Continued

SALT WATER DISPOSAL WELL

Gallatin County—
Carter Oil Co., McGinley 1, sw ne sw 33-7s-8e ... 2524

OLD WELLS DEEPENED

Hamilton County—
Texas Co., Davis 3, sw nw ne 7-6s-7e (otd 2668) ... 184 2715

Marion County—
Magnolia, Shanafelt 30, ne se nw se 29-2n-2e (otd 3455) ... 54 4652
Shanafelt 38, se sw se sw 29-2n-2e (otd 3366) ... 129 4585
Texas, Fossleck 14, sw se se nw 29-2n-2e (otd 3426) ... 124 4640
Friesner 19, nwc ne nw 32-2n-2e (otd 3360) ... 93 4583
Texas-Rossi, Brooks Comm. 1, nw ne sw 29-2n-2e (otd 3420) ... 91 4610

White County—
Blackstock, Storms 1, nw ne ne 23-6s-9e (otd 2266) ... 60 2276

Indiana

Elkheart County—
A. W. Downs, Harmon 1, nec se 11-38n-4e ... 30 651

Fountain County—
Fountain Oil, Glasscock 1, se sw 2-18n-5w ... • 1022

Gibson County—
Papoose Oil Co., Cooper 17, se ne sw 13-3s-14w (pb 2549) ... 150 2880
Hall Edwards, Rec., Maier 29, se ne nw 14-3s-14w ... 300 2522
Maier 30, sw nw ne 14-3s-14w ... 600 2548
Continental Oil, Bozeman Land 36, sw se sw 23-3s-14w ... 282 2886
Keck 21, ne sw se 27-3s-14w ... 203 2874

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GULF BUILDING • HOUSTON

Porter County—
Joe Bander, Jones 2, sec ne sw 20-36n-5w ... • 318
John Kabana, Chesterton St. Bank 1, se nw nw ne 20-37n-5w ... • 360

Posey County—
Continental Oil,Kleiderer 5, se nw ne 33-3s-14w ... 1750 2898
Kleiderer 3, se nw nw 35-3s-14w (pb 2128) ... 7 2607
Ed. Holmans, Mumford Realty Co. 2, ne nw ne 6-4s-13w ... 8 2148
Gulf, Aldridge Comm. 1, se ne ne 8-6s-14w ... • 3106

Shelby County—
Phillips & Kost, Bowman 1, ne se se se 26-14n-6e ... • 1055

Vanderburg County—
T. W. Drake, Nurrenbern 1, se ne ne 6-7s-11w ... 24 1160
Illind Oil Co., Hendricks 1, se se sw se 31-6s-11w ... • 1920

Rush County—
Patton, Fee 2, sw nw ne 19-12n-10e. ¶0.03 940

Kansas

Barton County—
Derby et al, Frees "A" 1, c w½ nw ne 34-16-11w ... • 3428
Darby, Bitter 4, sw nw 5-16-13w ... 2568 3358
Vernon et al, Popp 1, ne se nw 15-16-14w ... • 3420
Shell, Radenberg 6, ne se sw nw 3-17-11w ... 2164 3324
Stanolind, Schwartz 3, swc se 34-19-11w ... • 3350
Gulf, Meyer 3, c w½ se se 13-20-11w ... 3000 3256
Broderick et al, Selee 3, c n½ ne sw 17-20-11w ... 181 3317

Butler County—
Joe Davis, Sever "A" 2, swc se 11-28-4e ... 35 2235
Adair-Morton, Cannon 3, ne sw nw 15-28-7e ... 378 2714
Table Mesa, Ferrell Ranch 4, sw se nw se 21-28-8e ... 140 2672

Ellis County—
Dickey, Carmichael "C" 1, c s½ sw nw 17-11-17w ... 3000 3375

Ellsworth County—
Phillips, Rolfs 1, c s½ se nw 10-17-9w ... • 3442
Ash et al, Splitter 3, c s½ ne sw 19-17-9w ... 825 3247
Cities Service et al, Schroeder 9, sw nec nw 29-17-9w ... 3000 3233

Greenwood County—
Polhamus et al, Britton 1, se sw se se 13-24-9e ... 3 2221

Harvey County—
Hipple, Martindell 4, se ne se 18-23-3w ... 150 3362

Jefferson County—
McLaughlin & Sons, Bartlett 1, c sw sw 33-9-20e ... ¶7.5 1430

Marion County—
Harwood, Novak 8, ne se sw 28-17-4e ... 812 2423
Larieux et al, Novak 2, swc 28-17-4e 306 2420

McPherson County—
Wakefield, Koehn 1-C, c w½ ne nw 36-19-2w ... • 2985

Rice County—
Derby et al McGlyn 1, c e½ se nw 21-20-9w ... 134 3290

Russell County—
Liggett et al, Durham "B" 2, nw se ne 20-11-15w (pb 3278) ... 40 3346
Phil - Han, Letsch 5, nwc ne 34-14-13w ... 1650 2856
Darby, Streckers "A" 3, c n½ se ne 25-14-14w ... 3000 2940
Shell, Maier "B" 1, nec sw 35-15-14w ... • 3366

Saline County—
Rocket Dr. Co. et al, King 1, c s½ sw sw 29-15-1w ... • 2722

Stafford County—
Bodine, Willcutt 1, c e½ ne se 4-21-13w ... 2036 3560
Gulf, Volker 1, c s½ sw nw 2-24-11w ... • 3770
Volker 2, c s½ se nw 2-24-11w (pb 3685) ... 280 3731
Stanolind, Richardson 6 ne nw sw 10-24-11w ... 3000 3820
Cities Service, Jordan 2, c e½ sw nw 15-25-14w ... 2602 3838

Woodson County—
Phillips, Wix 1, nw se ne se 31-25-15e ... • 1525
Fidelity 1, sw nw ne 4-26-15e ... • 1593

OLD WELL DEEPENED

Stafford County—
Stanolind, Hartnett 11, c n½ ne nw (otd 3774) ... 3000 3806

Kentucky

McLean County—
W. E. Hupp, Livermore Timber Co. 3 ... 100 1053
J. C. Miller et al, Lee 1 ... • 1851

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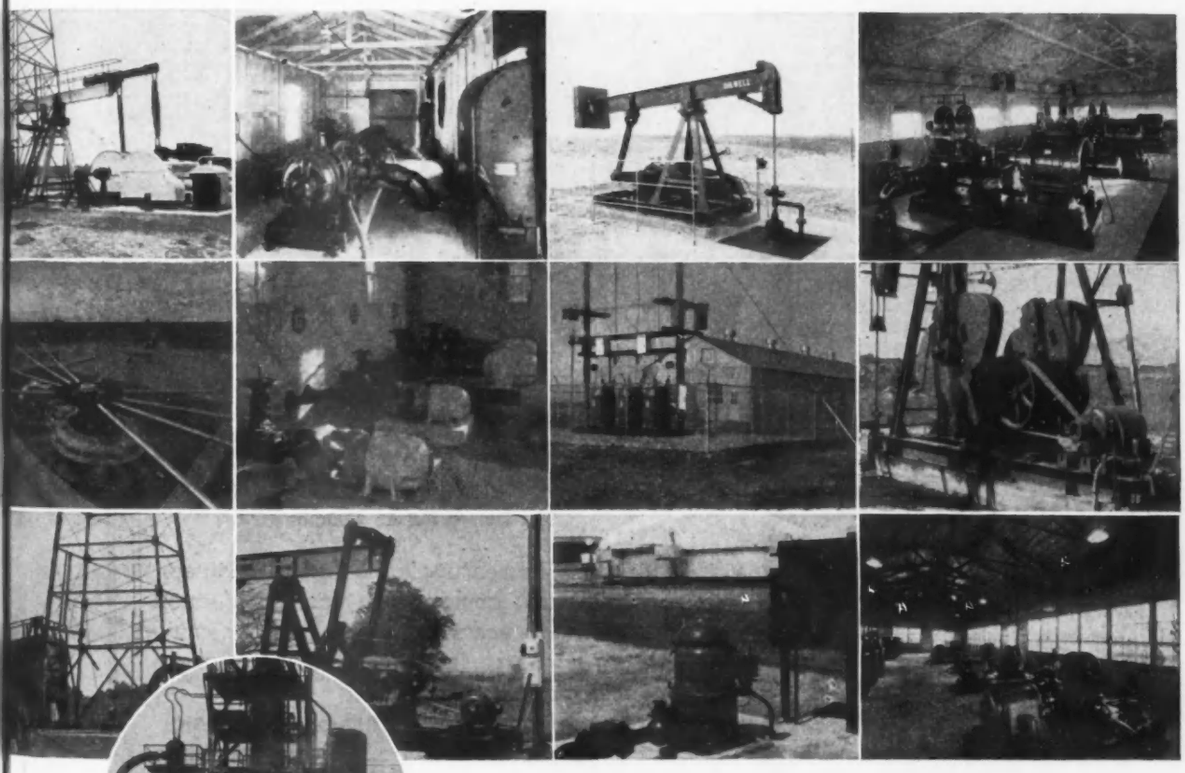

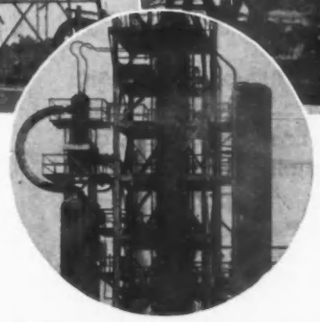

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United States Well Completions—*Continued*

Company, Well and Location	Init. Prod. Bbls.	Depth

South Louisiana

Evangeline Parish (Ville Platte)—
Continental, Vidrine B-1 ..... * 10,235
Fontenot-Tate Unit 28, No. 1 ..... * 10,199
Jefferson Parish (Barataria)—
California Co., Fleming Plantation 5 ..... 308 10,493
Fleming Plantation 6 ..... 279 8840
La Fourche Parish (Golden Meadow)—
Brown-Wood Oil Corp., Hanley 1 ..... 140 5220
La Fourche Parish (Valentine)—
Mabro Oil Co., Dousson 2 ..... * 9945
Plaquemines Parish (Octave Pass)—
Texas Co., State 1 ..... 195 11,494
Plaquemines Parish (West Bay)—
Gulf, Buras Levee Dist. E-2 ..... 325 7296
Rapides Parish (West Alexandria)—
Navarro Oil Co., Cooper 1 ..... * 7035
St. Martin Parish (Anse La Butte)—
Stanolind, Bergeron 1 ..... 219 4775
Terrebonne Parish (Wildcat)—
Sinclair Prairie et al, Aragon Plant 1 ..... * 11,632
Vermilion Parish (Gueydan)—
Fohs, Bulvey 4 ..... 75 4855
Mulvey 5 ..... * 5393

North Louisiana

Bienville Parish (Lake Bisteneau)—
Arkansas-Louisiana Gas, Carter 1, 13-16n-10w ..... ¶66.5 5086
Bossier Parish (Sligo)—
Triangle Dr. Co., Smith 1, 14-17n-12w 125 3102
Caddo Parish (Pine Island)—
C. C. Crews, Stiles 10, 33-21n-16w 25 1862
A. R. Hancock, Helpman 10, 16-21n-16w 25 1033
Guy Kinney, Crystal 4, 24-21n-16w 25 1013
Steve Reele, Sklar 1, 12-20n-16w.. 50 1551
La Salle Parish (Little Creek)—
Placid Oil Co., Goodpine B-2, 32-9n-2e 80 3078
La Salle Parish (Olla)—
Arkansas Fuel Oil, Kees E-2, 7-10n-3e 48 2373
Placid Oil Co., Louisiana Cent 65, 35-10n-2e 120 2348
La Salle Parish (Nebo)—
H. L. Hunt, Goodpine A-19, 16-7n-3e 240 3751
Sabine Parish (Zwolle)—
Ed Bailey, Hale 1, 6-7n-12w ..... * 2197
Union Parish (Monroe)—
T.I.P. Corp., Jordan 1, 11-21n-3e. ¶2.0 2182
Webster Parish (Cotton Valley)—
Hunt Oil, Pardee Co. 1, 36-22n-10w * 6105
Magnolia, Robbins Unit 1, 21-21n-10w 30 8405

Michigan

Allegan County—
Kent Dr. Co., Dozeman 1, nw sw ne 11-4n-14w ..... * 1600
A. E. Kopprasch, Klingenberg 1, sw ne nw 21-4n-14w ..... * 1600
Socony-Vacuum, Weber 4, se se sw 11-4n-13w 35 1592
John McLean, Zefras 2, ne ne ne 15-4n-13w ..... * 1624
Muskegon Dev. Co., Arbanas 1, sw ne sw 9-3n-11w ..... * 1763
Clare County—
Sun, State B1, c w nw ne 5-19n-6w 65 3808
Strange 2, c s nw sw 36-20n-6w.. 500 3767
Rowmor & Hughe, Davision 1, c w sw se 28-20n-6w ..... * 3783
Gratiot County—
Belvidere Oil Co., Freeman 1, ne sw se 22-10n-3w ..... * 978
Home Nat. Gas Co., Baldwin 1, c ne 31-11n-4w ..... * 1018
Isabella County—
Bundy Hill Nat. Gas. Co., Winters 1, ne ne se 10-14n-6w..... ¶0.25 1340
Michigan Cities, Diehl 1, c se 15-14n-6w ..... ¶0.25 1410
Oceana County—
American Dr. Co., Skidmore 1, se sw sw 9-16n-16w ..... * 1947
Osceola County—
Taggart Bros., Brock 16 c sw 20-18n-10w ..... ¶3.5 1205
Ottawa County—
Southwest Dev. Co., Costerbrock 1, se se nw 3-5n-13w..... * 1800
Saginaw County—
Robert Bond, Dohering 1, e ne nw 11-12n-1e ..... * 3433
Van Buren County—
S. L. Conant, Simmons 1, ne nw se 24-1s-14w ..... * 1367
Miller Bros., Foster 1 se sw sw 2-1s-15w ..... * 1160

Mississippi

Yazoo County (Tinsley Dome)—
J. P. Evans, Johnson 3, 31-10n-2w.1200 5100
Gholson & Hodge, Sorrells 1, 32-10n-2w 830 5134
Hassie Hunt, McMurtray 1, 25-10n-3w 720 4856
Plains Prod. Co., Milner 2, 7-10n-2w 660 5350
Sinclair-Wyoming, Sorrells 2, 29-10n-2w 840 5133
Slick-Urschel, Fee 17, 35-11n-3w.. * 5510

Nebraska

Nemeha County—
Phillips, Neill 1, s sw ne 24-4n-14e * 2931
Richardson County—
W. H. Martgan, Smith 1, c e½ nw nw 31-3n-16e (pb 2521) 166 2539

New York

Allegany County—
Trio Oil Co., Lot 8, Bolivar..... 10 1388
Hardman & Thompson, Hazzard farm, Wirt 10 1359
Star Oil Co., Neff farm, Bolivar.. 6 1264
Bradley Prod. Corp., Duke farm, Alma 4 1426
J. P. Herrick No. 2, Howe farm, Bolivar 9 1422
Bradley Prod. Corp., Fitz-Carroll farm, Bolivar 5 1352
Floyd Oil Co., Fanton farm, Wellsville 4 1272
Sloan & Zook, McDermitt farm, Bolivar 5 1371
Clair Oil Co., Carrier farm, Wirt.. 6 1359
Forest Oil Co., Ackerman farm, Wirt 8 1369
F. J. Wilson, Burdick farm, Wirt 5 1421

WATER INTAKE WELLS

Walter J. McEnroe, Hoover farm, Bolivar 1453
Wm. Taylor Est., Reid farm, Alma ... 1388
Roy E. Vossler, McEnroe farm, Alma 1280
Bohne, Bros., Helmhold farm, Wellsville 1363

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United States Well Completions—*Continued*

New Mexico

Eddy County (Wildcat)—
Basin Oil Co., Kimmell 1, nec 5-20s-26e ..... • 1630
Eddy County—
Flynn-Welch-Yates, State 76, nw se sw 29-18s-28e 10 2016
Fullerton Oil Co., Little 1-A, c nw nw 28-18s-31e 33 3753
Jones-Yates et al, Everst 1, nw ne se 15-18s-26e (pb to 1466)..... 10 1984
Lea County (Arrowhead)—
Ohio Oil, State-McDonald 21, nec 24-22s-36e 480 3716
Lea County (Maljamar)—
Carper Dr. Co., Simon 4-A, c nw sw 29-17s-32e 912 3935
Maljamar O&G Corp., Baish 14-A, c nw sw 21-17s-32e 80 4185
Baish 7-B, c se ne 22-17s-32e.... 75 4002
Sierra County (Wildcat)—
Barney Iorio et al, Fee 1, 25-14s-5w • 2100

Ohio

Coshocton County—
Preston Oil, Rine 3 ..... 40 3193
Guernsey County—
Wiser Oil Co., Bell 1 ..... • 1642
Licking County—
Kuntz-Hulse, Stephan 1.....¶0.02 2389
C. A. Davis, Hancock 1 .....¶0.02 2413
Everett Co., Castor 1 ..... • 2411
Lorain County—
Ohio Fuel Gas, Holcomb 1..... • 2368
Medina County—
Preston Oil, Grigsby 7-XGO ..... • 493
Grigsby 7-XHO ..... • 478
Meigs County—
Downie et al, Ward 1.....¶0.3 726
Muskingum County—
Pure Oil, Barringer 1..... • 4205
Stark County—
J. C. Steiner Co., Bordner 1 .....¶0.12 4577
Washington County—
Schneider Oil Co., Haynes 1..... 1 1250
Albert Stine, Fee 1 ..... 1 1125
H. Dailey et al, Seyler 1 ..... • 916
Wayne County—
Kemrow Co., Kean 3 .....¶1.25 2993

GAS INJECTION WELL

Medina County—
Preston Oil, Grigsby 7-GO 528

Oklahoma

Caddo County—
Pace, Davis 4, c n½ sw nw 6-5n-9w 200 3404
Ohio, Wagner 11, nwc sw 12,5n-9w.1075 3963
Magnolia, Medrano 10, sw ne sw 36-6n-10w 60 3523
Comanche County—
Wichita Oils, School Land 10, ne sec 20-2n-10w ..... • 1039
Runyon, Whitehead 1, se nw ne 3-1s-13w ..... • 352
Cotton County—
Ellison et al, Harris 1, c nw ne 26-2s-13w ..... • 2296
Creek County—
Bryan, Deere 1, ne se ne 34-14n-7e (pb 3975) 64 4020
Springer, Colbert 1-A, ne sw sw 20-15n-9e (pb 3672) 50 3674
Midco, Abraham 1, sw se ne 32-17n-10e ..... • 2800
Reynolds, Johnson 2-A, nw sw se 33-18n-11e (pb 1596) 5 1606
Fortner, Isles 1, nec se 1-19n-9e (pb 2093) 15 2097
Jackson County —
Aloma, Robertson 5, ne sw se 15-1n-20w 20 1584
Jefferson County—
Johnson Dr. Co., Bounds 2, nec sw 13-6s-6w ..... • 1960
Kiowa County—
Bud Lewis, Mitchell 1, nwc se 19-7n-17w ..... • 1378
Latimer County—
Limestone O. & G., Kilpatrick 1, nw se nw se 16-5n-18e .....¶0.5 2828
Lincoln County—
Kerlyn, Froug 2, sw ne sw nw 2-13n-6e 40 4274
Summit et al, Cleer "B" 2, sw nw sw 6-15n-5e ..... • 3611
McIntosh County—
McNutt & Young, Williams 1, sec nw 1-12n-16e .....¶5.0 1811
Okfuskee County—
McMahon, Williams 2, sw se se 27-12n-8e (pb 3667) 20 3670
Lee, Ramsey-Lehmer 1, se ne nw 35-12n-8e ..... • 1690
Okmulgee County—
Springer, Sullivan 1-A, se sw sw 5-12n-12e .....¶2.0 3253
Brookhaven, Milam 2, ne ne sw ne 7-13n-14e ..... • 2584
Wallace, Colbert 19, se nw ne 14-14n-14e ..... • 1132
B. J. Greenfield, Howard 4-A, se se nw nw 32-14n-14e 8 1742
Osage County—
Norbla et al, No. 1, swc 23-25n-6e • 2867
Blackwell No. 8, ne sw sw 3-28n-11e 75 956
No. 11, swc nw 10,28n-11e 30 996
Payne County—
Mid-Continent et al, Ramsey 14, sw ne se nw 18-18n-2e 3480 4615
Pontotoc County—
H. Z. Moore et al, Julius 2-C, ne se nw 6-4n-7e .....¶1.7 1153
Huddleston, Freeman 3, se ne nw ne 33-5n-8e 26 692
Pottawatomie County—
Amerada, Peters 1, sw nw se 27-8n-4e (pb 3935) 524 4346
Anderson-Prichard, Billington 1, c se se 13-9n-4e 240 4152
Stanolind-Amerada, Billington 1, nw se ne 26-9n-4e (pb 4360)....1176 4441
Seminole County—
Mid-Continent, Barnhart 1, nw se ne 19-7n-8e 195 1505
McIntyre, Brown 1, sw se ne 14-9n-7e (pb 3550) 162 4337
Stephens County—
Pace, Allen 28, ne sec ne 3-2s-8w.. 15 2278
Tillman County—
Stovall Dr. Co., Howell 1, ne nw se 13-1n-17w ..... • 555

OLD WELLS DEEPENED

Jackson County—
Vaughn, Stokes 8, ne nw sw 11-1n-20w (otd 1460) .....¶1.0 1638
Okmulgee County—
Francis, Adams 5-A, se se nw 33-15n-14e (otd 1685) 5 1711
Seminole County—
Atlantic, Damron 1, nec nw 22-6n-6e (otd 3583) (pb 3577) 30 3647

Pennsylvania

BRADFORD DISTRICT

Wilson & Fitzgibbon, Fee ..... 1 ....
Forest Oil Corp., 2 wells ..... 2 ....
Forest Pet. Corp. 2 wells..... 2 ....
Niagara Oil Corp., 6 wells..... 6 ....
Bradford Tr. Co., 24 wells..... 24 ....

[*Continued on next page*]

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Company, Well and Location	Init. Prod. Bbls.	Depth
PENNSYLVANIA—Continued		
WATER INTAKE WELLS		
Messer Oil Corp., Loop	...	....
Forest Oil Cor.	...	....
Forest Pet. Corp., 2 wells	...	....
Niagara Oil Corp., 3 wells	...	....
D. Y. M. Corp., No. 3 Bing 466	...	....
NEW YORK-PENN GAS FIELD		
Higgins et al, Woodruff 2	*	....
MIDDLE DISTRICT		
I. Dana Kahle, Berlin	1½	....
W. T. & F. T. Barry et al, Barry	2	....
SOUTHWEST DISTRICT		
Armstrong County—		
Peoples Nat. Gas, Keppler Hrs. 1	0.09	3412
Fayette County—		
J. H. Cornwall, Newman 1	0.86	727
Orville Eberly et al, Valerio 2	0.65	2391
Washington County—		
Carnegie Nat. Gas, Chartiers-Southern RR 3	*	3271
Foley & Williams, Vankirk 3	*	1388

Texas Panhandle

Company, Well and Location	Init. Prod. Bbls.	Depth
Gray County—		
Gulf, Saunders 12-A	240	3100
Hutchinson County—		
Benonine Oil Co., Starnes 12	325	3180
Cree & Hoover, Harvey Sisters 10	151	3057
Kewanee Oil Co., Lewis 53	411	3067
Phillips Pet. Co., Cockrell 54	199	2919
Cockrell 57	244	3077
Lizzie 3	186	3200
Skelly Oil, Watkins 15-B	340	2785
Wheeler County—		
Portman & Jenkins, Sloss 2	233	2101

East Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
Atlantic Ref., Kinney 48 (335.28-ac)	700	3639
J. R. Gaskey et al, Alford 2 (85/100-ac)	500	3572
Kilgore Area—		
Geo. I. McGee, Fee 2 (18/100-ac)	1200	3570
Fee 3 (18/100-ac)	960	3567
J. W. Russell et al, R. Lacy 4-a (267-ac)	500	3457
Shell, Watson 95 (385.2-ac)	7000	3698
Watson 97 (385.2-ac)	6500	3660
Longview Area—		
General American Oil Co.-W. L. Kistler, Adams 32 (103-ac)	7200	3594
Sinclair Prairie, Lawson 23 (84.19-ac)	4800	3581
Tide Water, Everett 5 (20-ac)	3000	3490
Richey 10 (43.4-ac)	6500	3526
Anderson County (Cayuga)—		
Carter-Gragg Oil Co., McMahon 4	204	4007
Anderson County (Long Lake)—		
Tide Water-Seaboard, Monnig Bros. 11	64	5264
Cass County (Wildcat)—		
British-American, East Texas Iron Ore Assn 1, L. Mornen sur	*	4330
Freestone County (Wortham)—		
J. B. Daniel et al, Vincent 1	39	2965
Marion County (Pine Island-Smithland)—		
H. T. Manning, Gray 1, Needham sur	17	2352
Navarro County—		
W. H. Clements et al, Eden 2	*	311
Rains County (Wildcat)—		
L. L. Prock et al, Grimes 1	*	4892
Smith County (Wildcat)—		
Sells Pet., Inc.-Delta Dr. Co., Kay 1	*	5361
Titus County (Talco)—		
Humble, Temples 5	476	4330
Van Zandt County (Van)—		
Preston Calvert et al, Carter 3	832	2865
Wood County (Hawkins)—		
Bracken Oil Co., Johnson 1, lot 6	426	4850
Cable Tool Dr. Co., Atkins 1	427	4890
Geo. A. DeMontrond-E. C. Laster, Cobb 1 (7/100-ac)	442	4811
General American Oil Co., Holmes 1-B, lot 6	455	4830
Humble, Hargett 1 (119.37-ac)	442	4827
Ponder 1 (151-ac)	401	4963
Shamburger 1 (156.45-ac)	345	4862
Roger Lacy et al, Crow 1 (8/100-ac)	478	4818
P. G. Lake, Inc., Cobb 1, lot 8	437	4836
Alex McCutchin et al, R. Wright 1	465	4822
L. B. Orr et al, Parrish 1	468	4790

West Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Borden County (Wildcat)—		
B. C. Mann et al, Canning-Dennis 1	*	2660
Cochran County (Slaughter)—		
Milhoan Prod. Co., Duggan 1-A	779	5014
Crane County (Sand Hills)—		
Humble, Tubb 53 (7338-ac)	1069	4530
Crane County (Dune)—		
Atlantic Ref., University 1-17	90	3300
Crane County (Church & Fields)—		
Magnolia, University-Hardwick 22	116	3136
Ector County (Foster)—		
Forest Dev. Corp., Moss 1-G	468	4341
I.T.I.O. Co., Johnson 4-F	522	4175
Kewanee Oil Co., Foster 3	339	4338
Mid-Continent Pet., Hinkle 2	459	4347
Ector County (Goldsmith)—		
Gulf, Goldsmith 351	1430	4222
Ector County (North Goldsmith)—		
Magnolia, Cowden 2	104	4400
Ector County (Jordan)—		
Gulf, University 7-N	1236	3598
Fisher County (Wildcat)—		
Al Landers-H. J. Eisele, Newman-Coronado 1	*	4981
Gaines County (Seminole)—		
Amerada, Robertson 4 (pb 5260)	210	5285
Magnolia-Atlantic, H. & J. 9-221	81	5222
Ohio Oil, Tippett 8	765	5278
Skelly Oil Co., Robertson 1	691	5290
Gaines County (Wasson)—		
Amon G. Carter, Moore 5-A, Sec. 46	668	4995
Continental-Amon Carter, Langdon 11-44	646	5048
Hockley County (Slaughter)—		
Magnolia, Slaughter 4	977	4973
Sid Richardson et al, Barry 2	828	4999
Coe 8	342	4986
Coe 11	1087	4985
Denton-Sun 5	745	4970
Slaughter 11, lab 8	988	4954
W. J. Richardson et al, Allison-Sun 5	602	4980
San Andres Prod. Co., Caddell 5-A	461	4984
Western States Gaso. Corp., Mallet 2	734	4999
Martin County (Wildcat)—		
Magnolia, Teague 1	*	7701
Pecos County (Taylor-Link)—		
Allan Hargrave et al, University-Humble 1	*	1730

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Gulf Building Houston, Texas

ABERCROMBIE PRESSURE GAUGE

United States Well Completions—*Continued*

Company, Well and Location	Init. Prod. Bbls.	Depth
Pecos County (Tobarg)—		
Cardinal Oil Co., Tippett-Kirby 63-E	8	347
Pecos County (Walker)—		
Childress Roy. Co., White-Baker 2-B	75	2079
Upton County (Gulf-McElroy)—		
Gulf, McElroy 242	477	3121
McElroy 243	748	3023
McElroy 244	840	2962
Ward County—		
Gulf, O'Brien 164 (pb 2660)	236	2727
Magnolia, Sealy 8-41	770	2902
H. I. Waid et al, Brown 6	41	1870
Winkler County (Keystone)—		
Standard of Texas, Baird 18-54	198	3356
Yoakum County (Wasson)—		
Aloco Oil Co., Miller-Texaco 14-B	1047	5218
Moore-Texaco 3	594	5245
Argo Oil Corp., Comer 10-A	952	5225
Amon Carter-Continental, Willard 9, Sec. 38	524	5055
Mabee O&G Co., Willard 3-D	802	5195
Shell, Baumgart 15-B	1138	5176
OLD WELL DEEPENED		
Winkler County (Kermit)—		
Magnolia, Walton 69 (otd 2971)	11	3220

Southwest Texas

CORPUS CHRISTI DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Bee County (Wildcat)—		
Lewis Prod. Co., McKinney 1	*	4500
Brooks County (La Gloria)—		
La Gloria Oper. Committee, Corcoran 1	¶200.0 & 200	6774
Brooks County (Kelsey)—		
Magnolia, State-Marshall	750	4732
Colorado County (Sheridan)—		
Shell, Plow Realty 3 (new sand)	¶3.0 & 350	10,251
Hidalgo County (Nichols)—		
Baldridge & King, Yturria Town & Improvement Co. 1-D	350	4063
Jackson County (Lolita)—		
Humble, L. Ranch 15-A	1050	5284
Luling O. & G., Johnson 2	450	6405
Rogers 1	435	5296
Magnolia, Hamilton 5	400	5945
Skelly Oil, Mitchell 1	500	5952
Jackson County (West Ranch)—		
American Lib. Oil, L. Ranch 5	500	5623
W. Stewart Boyle, L. Ranch 3	650	5620
Magnolia, West 146-A	1300	5560
Jackson County (West Ganado)—		
Pure, Spacek 2	550	6815
Jim Wells County (Ben Bolt)—		
Bridwell Oil, Hoffman 1-C	650	5245
Jim Wells County (Orange Grove)—		
Cities Service Oil, Schuenemann 2	350	5100
Jim Wills County (Wade City)—		
Atlantic Ref., Mueller 5	150	4801
Nueces County (Agua Dulce)—		
C. Pete Burton, Purl 2	200	6520
Nueces County (Minnie Bock)—		
E. A. Graham, Gandy 1-B	500	6010
Sun, Bobertson 3	120	3819
Nueces County (S. Clara Driscoll)—		
Magnolia Petroleum, Johnson 8	250	3846
Nueces County (Stratton)—		
Bay-Tex Oil, Union Cent. Life Ins. Co. 14	650	6670
Conroe Dr., Sellers 4-A	600	6514
Southern Min., Sellers 5	400	6636
Stratton-Community 15	650	6569
Victoria County (Cologne)—		
Houston Oil, Hornstein et al 2	500	4827
Victoria County (McFaddin)—		
Barnsdall, Marberry 3	450	5303

LAREDO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Duval County (Wildcat)—		
Bancroft Oil, Murphy 1	*	3010
Duval County (Bridwell)—		
Forest Dev., Rogers 4	*	4453
Duval County (Charamousca)—		
Magnolia, D. C. R. C. 9 (288)	38	1540
Duval County (Cole)—		
E. C. L. Oil, Benavides 1	46	1730
Gordon Griffin, King-Harper Est 1	20	1758
Duval County (West Casa Blanca)—		
Magnolia D. C. R. C. 15(289-85)	41	1020
D. C. R. C. 16 (289-85)	40	1028
Jim Hogg County (Wildcat)—		
F. A. Gillespie & Sons, Gutierrez et al 2	*	2778
Jim Hogg County (Colorado)—		
Humble, King Ranch-Colorado 13-B	400	2926
Jim Hogg County (Manila)—		
Magnolia, Merchants Bank 46	75	2577
Starr County (Boyle)—		
Fidelity Oil & Roy. et al, Carruth et al 1-B	*	3543
Starr County (Kelsey)—		
Sun, Trevino 2-A	375	4772
Starr County (Rio Grande City)—		
Sioux Oil, Goodrich & Wood 12	*	1805
Starr County (Sun)—		
Humble, Montalvo 3	375	4859
Webb County (Glen)—		
Interstate Minerals, Lopez Est 60	84	2167
Transwestern Oil, Yaeger & Strohman 13	87	2168
Yaeger & Strohman 14	¶20.0	2155
Webb County (Killam)—		
O. W. Killam, Garcia 13	63	2050
Webb County (Laurel)—		
Smith & Story, Houston Oil Fee 1-A	*	3020
SAN ANTONIO DISTRICT		
Bexar County (La Coste)—		
W. M. Peacock & G. C. Summar, Peacock & Summar 1	¶1.0	1202
Bexar County (Tenney Creek)—		
Wiegand Bros., Hill 2	250	2656
Guadalupe County (Wildcat)—		
A. J. Hollifield, Willman 1	*	2124
Medina County (Chicon Lake)—		
Waldemar T. Fearis, Medina Irrigations Farms 2	3	429

West Central Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Coleman County—		
Anzac Oil Corp., Gardner 1	¶1.0	2291
Hamilton County (Wildcat)—		
A. J. Caldwell et al, Jones 1	*	2999
Jones County—		
Jones - Stasney - Groover - Rose, Humphrey 2-A	*	1747
King Oil Co. et al, Olson 2 (new pay)	40	1974
Palo Pinto County (Wildcat)—		
W. K. Gordon et al, Nolan 1 (pb 3466)	¶1.8	4067

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Wichita Falls, Texas, U. S. A.

United States Well Completions—*Continued*

Company, Well and Location	Init. Prod. Bbls.	Depth

North Texas

Archer County (Hull-Silk Deep)—
Thurmond Oil Co.-R. C. Lipscomb, Wilson 10 ..... 1194 4535
Archer County (Hull-Silk)—
Helmerich & Payne, Shephard 9.. 98 3997
Archer County (Vogtsberger)—
Walter Gant-Tom Medders, Vogtsberger 1 ..... 29 4807
Jim Jennings-Deep O. D. Co., Jentsch 1 ..... • 4855
Archer County—
Bridwell Oil Co., Bridwell 7..... • 950
Guy J. Brown et al, Hughes 2 .. • 1155
L. T. Burns et al, 1st Nat'l Bank 8 9 1451
Cochran & Cain, Little 13..... 20 1376
United Producers Co., Beardon 1.. • 1055
Archer County (Wildcat)—
W. A. Wise et al Abercrombie 1... • 1354
Clay County—
Akin-Dimock-Costley, Patrick 1-B. • 1143
McInness 7-B ..... • 1275
Johnson & Gorman, Taylor 1, blk 43 ..... 5 263
Kouri & Johnson, Taylor 4..... 9 1330
McElreath & Suggett, Turner 3.... • 1222
Sussex Oil Corp., Glasgow 23..... 58 1261
Cooke County—
C. J. Bohner et al, Sicking 6..... 108 1296
Gill & Witherspoon, Wilson 5..... • 1337
Foard County (Allee)—
J. B. Cunningham et al, Allee-Texaco 1 ..... • 2375
Jack County (Wildcat)—
Alma Oil Co., Dees 1 ..... • 4885
Jack County—
Maracaibo Oil Explo. Co., Owen 5 349 3084
Panhandle Ref. Co., Derrick 3..... 996 3098
Daugherty-Leffel 8 ..... 25 2955
Paul Steed et al, Derrick 2-A..... 358 3099
Montague County (Ringgold)—
Benson & Benson, Seay 1..... 245 5762
Montague County (Wildcat)—
Sinclair Prairie, Clingingsmith 1..1166 6131
Wichita County—
Akin-Dimock-Costley, Carnes 2, blk 3 ..... • 1429
Akin-Dimock-Costley et al, War-
Perry Browning et al, Warren 2.. 108 1501
W. H. Hammon, Fee 3-A..... 7 608
Hanlon & Buchanan, Burnett 2-A-A 10 862
O. Kemp et al, Heiserman 2 ..... 13 1733
Staley Oil Co. et al, Oates 1..... 60 1318
W. E. Prod. Co., Murphy 1..... • 1340
Wichita County (K-M-A)—
Huckelberry & Cline, Stone 1..... 496 3646
W. H. Hammon-Hanlon & Buchanan, Fassett-Tuttle 36 ..... 576 3978
Southport Pet. Co., Big Wichita River 11-AAA 232 3925
Wilbarger County (Consolidated)—
Waggoner Ref. Co., Waggoner Est. 6-GG ..... † 3727
Wilbarger County (Fargo)—
Amerada, Goodpasture 2 ..... 736 4000
Wilbarger County—
R. A. Laird & Lutz, Streit 3..... • 3340
Waggoner Ref. Co., Waggoner 3-CC 20 1104
Wilbarger County (Wildcat)—
W. B. Omohundro et al, Vaughn 1 • 5508
Young County (Wildcats)—
J. E. McDonald et al, Ward 1.... • 687
G. Willard Rich et al, Furr 1-sec 37 ..... • 400
P. B. Worthington et al, Andrews 1 • 895
Young County—
Burma Pet. Co., Duncan 5..... 242 918
Falcon Co., King 1 .....1068 3769
Leslie Lawler et al, Schlittler 2.. 396 3821

GAS INPUT WELLS

Young County—
N. D. Goldsmith et al, Wilson 6-A ... 1002
Kimmell, Lee & Co., Campbell 3-C ... 976
Pemeta Oil Co., Johnson 18-A..... ... 507

OLD WELL DEEPENED

Wichita County (K-M-A)—
W. P. Lincoln & Moore, Munger 1-B (otd 4025) ..... † 4373

Texas Gulf Coast

Brazoria County—
Pure, Greenameyer 1 ..... • 8655
Brazoria County (W. Columbia)—
Gulf, Mays 9 ..... 334 5776
Texas Co., Phillips 2 ..... 331 5744
Chambers County—
Sun, Jackson 3 ..... 666 8294
Chambers County (Red Fish Reef)—
Humble, Galveston State A-18.... 203 10,368
Galveston State A-19..... 214 9332
Fort Bend County (Boling)—
Mackhank Pet., Texas Gulf Sul. 1. 494 4464
Hardin County—
Republic & Houston, Elliott 1.... 206 6923
Harris County (Humble)—
L. J. Sessions, Horn 6..... 45 1119
Rebel Oil, Morris 1-A..... 72 5406
Harris County (Tomball)—
Humble, Bloecher 6 ..... 286 5572
Liberty County (Hardin)—
Woodley & Pan American, Humphreys 4 ..... 317 7645
Liberty County (Hull)—
Keown Corp., Hankamer-Peveto 2 32 2933
Unity Oil Co., Cruse 2 ..... 86 1810
Liberty County (S. Liberty)—
Sun, Mitchell 62 ..... 54 3499
Orange County (W. Pt. Neches)—
Phillips, Lutcher-Stark 5 ..... 80 4598
Tyler County—
Rockland O. Corp., Kountze 1 .... • 2502
Wharton County (Hillje)—
W. V. Bowles, Thonsgaard 1..... • 6432
Wharton County (Magnet)—
Humble, Cockburn 40 ..... 105 5540
Wharton County (Kubela)—
Texas Co., Wittig 3 ..... ¶ 4735
Wharton County (Withers)—
Barnsdall, Halamicek 1..... 18 5532

Wyoming

OLD WELL DEEPENED

Parke County (Frannie Dome)—
Stanolind, Rosenberg, 24, ne se ne 26-58n-98w (otd 3001)..... 425 3080

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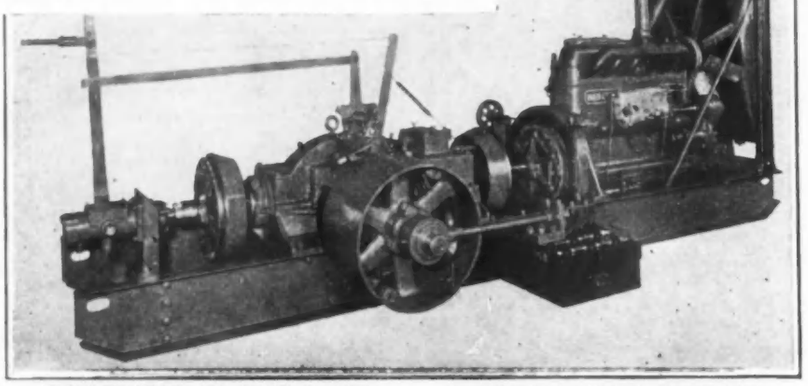

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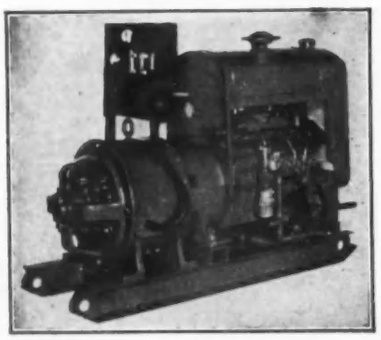

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YOUNG ENGINE CORPORATION, CANTON, OHIO

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WILDCAT REPORT
New Starts and Completions

ARKANSAS
FIRST REPORT

Ouachita County—Arkansas Fuel Oil Co.'s McGaughey 1, 6-15-18, rig for Smackover-lime test.

CALIFORNIA
FIRST REPORTS

Colusa County—Pacific Nat. Pet. Corp.'s No. 1, sec 17-17-4, rig, Maxwell area.

Los Angeles County—Robert S. Lytle's Anderson 1, sec 1-3-14, lcn, Athens area. Barnsdall's Honor Rancho A-19-1, sec 7-4-16, grading roads, Castaic area. Surety Holding Co.'s No. 1, sec 22-5-14, grading, Palos Verdes area.

COMPLETIONS

Kern County—J. J. Tavis's No. 1, sec 4-27-28, td 1754 ft in gray sand, top Vedder 1708 ft, abnd, Mt. Poso area.

Orange County—Tide Water's Olive-Orange 1, sec 19-4-9, td 4501 ft in basalt, top 4365, abnd, Olive area.

FLORIDA
FIRST REPORT

Walton County—T. V. Orr, Unknown 1, nw ne 11-1s-20w, dk.

KANSAS
FIRST REPORTS

Barton County—Branine & Holl et al's Rexroot 1, c e½ ne se 22-17-13w, rig.

Graham County—Shields et al's Waggle 1, c s½ sw se 28-7-24w, rur.

Marion County—Basinger & Fowler et al's Janssen 1, nec se 9-21-3e, dr.

Pawnee County—Gulf's Seymour 1, c n½ sw nw 34-21-18w, dr.

Rice County—Continental's Taylor 1, sw se sw 17-18-6w, dr.

Rush County—Magnolia's Conrad 1, c e½ ne sw 33-19-17w, dr.

Russell County—Central Pet. Co.'s et al's Waydziak 1, 25-15-12w, dr.

COMPLETIONS

Chautauqua County—Aladdin et al's Westerfield 1, ne sw nw 3-28-8e, between Weatherred & Oxford pools, Topeka 754 ft, Kansas City 1916 ft, Mississippi 2715-3002 ft, Arbuckle 3087 ft, hfw 3100-04 ft, abnd 3119 ft.

Reno County—R. E. Hess et al's McKee 1, c e½ ne se 8-22-8w, 1 mi s Sterling pool, Topeka 2490 ft, Lansing 3050 ft, hfw 3130 ft, Sooy 3469 ft, Mississippi 3475 ft, Kinderhook 3505 ft, Kinderhook lime 3615-45 ft, shot 40 qts 3470-90 ft, hfw, abnd 3705 ft.

Russell County—Wakefield et al's Cook 1-A, c e½ se ne 26-13-15w, abnd, Dillner pool, Ft. Riley 1845 ft, Florence 1948 ft, Topeka 2785 ft, Lansing 3065 ft, Sooy 3310 ft, Arbuckle 3331 ft, abnd 3344 ft.

Norton County—Barnsdall et al's Rumsey 1, c ne nw 35-1-21w, 16 mi n Van Patton pool, base Ft. Hays 595 ft, Dakota 990 ft, Morrison 1380 ft, Permian 1630 ft, Anhydrite 1890 ft, Topeka 3285 ft, Lansing 3490 ft, Arbuckle 3752 ft, abnd 3810 ft.

NORTH LOUISIANA
FIRST REPORTS

Grant Parish—Bertfield Corp's McManus 1, sw sw 8-8n-2w, dk for Wilcox test.

Caldwell Parish—Big West Dr. Co.'s Tensas Delta 1, c se se 36-12n-3e, rig.

SOUTH LOUISIANA
FIRST REPORTS

Cameron Parish—Stanolind's Sweet Lake Ld. & Oil Co. 1, 1 mi w Chalkley fld, sec 13-12s-7w, lcn.

Iberia Parish—Texas Co.'s State 2, Rabbit Island pros, Atchafalaya Bay, lcn.

St. Mary Parish—Harbor Oil Co.'s Leopard Bayou 1, Bayou Sale pros, e Humble's Marin 1, sec 14-16s-1e, lcn.

Terrebonne Parish—Stanolind's Realty Operators 1, Southdown area, n of shell dry hole, sec 102-17s-17e, sp.

COMPLETIONS

Plaquemines Parish—Texas Co.'s State 1, Octave Pass area, td 11,494 ft, 7⅝-in 11,042, 5-in liner to td, perf 11,370-400 ft, 195 bbls 5/32-in ch, tp 1300 lbs, 36.1-gr, gor 1981/1, new pool, sec 32-20s-20e.

Rapides Parish—Navarro Oil Co.'s Cooper 1, West Alexandria area, sec 54-4n-2w, Wilcox 4658 ft, abnd 7035 ft.

Terrebonne Parish—Sinclair Prairie et al's Aragon 1, Bourg area, sec 5-18s-19e, elec log showed sd 9333-48 ft, 8112-22 ft, side-wall cores failed to show, abnd 11,632 ft.

MICHIGAN
FIRST REPORTS

Missaukee County—Sun's Hogan 2, c w ne sw 12-22n-5w, dr.

Osceola County—Turner Pet. Co.'s Pritchard 1, nw ne ne 7-18n-7w dr.

COMPLETIONS

Allegan County—Muskegon Dev. Co.'s Arbanas 1, sw ne sw 9-3n-11w, Traverse 1740, abnd 1763 ft.

Gratiot County—Belvidere Oil Co.'s Freeman 1, ne sw se 22-10n-3w, Stray 960, abnd 978 ft.

Oceana County—American Dr. Co.'s Skidmore 1, se sw sw 9-16n-16w, Traverse 1804 ft, abnd 1947 ft.

Ottawa County—Southwest Dev. Co.'s Oosterbrock 1, se se nw Section 3-5n-13w, Traverse 1777 ft, abnd 1800 ft.

Saginaw County—Robert Bond's Doehring 1, e½ ne nw 11-12n-1e, Dundee 3323 ft, abnd 3433 ft.

MISSISSIPPI
FIRST REPORTS

Lamar County—Freeport Sulphur Co.'s Tatum 1, ne 14-12nl-16e, spd.

Leake County—Sinclair-Wyoming's Pearl River Valley Lbr. Co. 1, se nw 28-9n-6e, rig.

Sharkey County—H. Avery's Cameron 1, ne nw 33-14n-6w, mat.

Yazoo County—Sinclair-Wyoming's Swayze 1, 23-12n-1e, mat.

NEBRASKA
FIRST REPORTS

Gage County—Lewis Jones et al's Ledus 1, c ne sw 5-3n-7e, min.

Richardson County—J. E. Palensky et al's Kalous 2, swc 5-2n-13e, lcn.

COMPLETION

Nemaha County—Black Gold Operating Co.'s Knisely 1, c sw nw 32-4n-16e, 15 mi sw Auburn, Lansing 898 ft, Mississippi 2115-2352 ft, Hunton 2587 ft, abnd 2650 ft.

PRINCIPLES OF SEDIMENTATION

By W. H. TWENHOFEL
Professor of Geology, University of Wisconsin

A guide to better understanding of sedimentary products and structure

The professional geologist, and the student, will find this book invaluable in that it will give them an understanding of the significance of sedimentary products and structure that will enable them to understand conditions obtaining during the deposition of the sedimentary materials and the significance of observations in terms of recovering economic products from sedimentary rocks.

CHAPTER HEADINGS

1. Introduction
2. The Environmental Factors
3. Classification and Consideration of Environments
4. Origin of Inorganic Sediments
5. Interrelations of Organisms and Sediments
6. Transportation and Deposition of Sediments
7. Classification of Sediments and Sedimentary Rocks and Minerals
8. The Clastic Sediments
9. Sediments of Chemical Deposition
10. Sediments of Chemical Deposition: Siliceous, Ferruginous and Manganese Sediments
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12. Sediments of Chemical Deposition: Evaporites
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14. Structural Features of Sedimentary Origin
15. Textures and Colors of Sediments

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NEW MEXICO

FIRST REPORTS

Lea County—Helmerich & Payne, Inc. et al's State-Phillips 1, c nw sw 3-14s-38e, mim. Harry W. Leonard, Welch et al's State 1, c nw nw 18-20s-33e, lcn.

COMPLETIONS

Eddy County—Basin Oil Co.'s Kimmell 1, nec 5-20s-26e, elev 3275 ft, abnd 1630 ft.

Sierra County—Barney Iorio et al's Fee 1, 25-14s-5w, abnd 2100 ft, plugged back to 1550 ft for mineral water.

OKLAHOMA

FIRST REPORTS

Atoka County—C. A. Matson et al's Rowland 2, sw ne ne 18-3s-10e, dr.

Garfield County—Gulf's Schroeder 1, c e½ ne nw 8-23n-4w, lcn.

Hughes County—H. O. Pope et al's Manahan 1, nec nw 30-4n-9e, dr.

Lincoln County—Portable Dr. Co. et al's Scott 1, nwc se 31-17n-4e, mim.

Osage County—B. H. Wofford et al's Osage Tribe 1, swc nw 10-22-11e, dr.

Pottawatomie County—C. L. Lippert et al's Rosebush 1, ne se sw 34-10n-3e, rur.

Seminole County—Hall-Jordan Oil Co. et al's Jennings 1, c se se 8-8n-8e, rur.

COMPLETIONS

Creek County—Bryan Pet. Co.'s Deere 1, ne se ne 34-14n-7e, new pay for West Arno pool, first Wilcox 3967 ft, td 4020 ft, pb 3975 ft, shot 100 qts, 64 bbls.

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Garvin County—Stanolind et al's Little 1, c e½ ne se 16-3n-1e, 1 mi e Pauls Valley, base Pontotoc 2135 ft, Simpson Ditreital 2600 ft, basal Bromide 3418 ft, McLish 3450 ft, basal McLish 3944-4045 ft, Oil Creek 4045 ft, Arbuckle 4590 ft, abnd 4866 ft.

Kay County—Helmerich & Payne's Geiger 1, ne nw ne 29-28n-1w, 3 mi sw Southeast Braman pool, Oread 2010 ft, Mississippi 3430 ft, Woodford 3468 ft, Second Wilcox 3587 ft, Arbuckle 3645 ft, abnd 3682 ft.

Lincoln County—Helmerich & Payne's Hennessey 1, nwc sw 23-16n-3e, 10 mi n Chandler pool, Upper Pawhuska 888 ft, Lower Pawhuska 1220 ft, Avant 2320 ft, Dewey 2656 ft, Hogshooter 3010 ft, Layton 3086 ft, Checkerboard 3308 ft, Cleveland 3357 ft, Oswego 3860 ft, Verdegras 4045 ft, Pink Lime 4185 ft, Mississippi 4475 ft, Woodford 4600 ft, Hunton 4638 ft, Sylvan 4650 ft, Viola 4743 ft, Dense 4775 ft, Dolomite 4893 ft, Wilcox 4799 ft, Second Wilcox 4850 ft, abnd 4872½ ft.

Okfuskee County—F. E. Weimer et al's Williams 1, ne nw sw 16-12n-10e, 2 mi se Morse, Oswego 1180 ft, Calvin 1210 ft, Inola 2245 ft, Salt sd 2295 ft, Booch 2665-90 ft, Wapanucka 3085 ft, Bartlesville 2295 ft, Pitkin 3350 ft, Mayes 3350 ft, Sycamore 3555 ft, Woodford 3557 ft, Hunton 3573 ft, Sylvan 3645 ft, Viola 3720 ft, Dense 3755 ft, Dolomite 3758 ft, Wilcox 3769 ft, abnd 3774 ft.

Logan County—Carter Oil Co.'s Gaffney 1, c e½ se nw 12-16n-1w, 4 mi s Langston pool, first Wilcox 5484 ft, Second Wilcox 5674 ft, abnd 5689½ ft.

Tillman County—Stovall Dr. Co. et al's Howell 1-A, nw se se 13-1n-17w, 15 mi n Frederick pool, abnd 555 ft.

EAST TEXAS

FIRST REPORTS

Panola County—John G. Mayo's Frost Lbr. Indstries 1, Thos. Kelly sur (near Deadwood), mat for 6200 ft test.

Freestone County—Carter-Gragg Oil Co.'s Mims 1, 187-ac tr, J. M. Lyons sur, Butler salt dome Woodbine prospect, cem 9⅝-in cas 1005 ft.

Cass County—British-American's East Texas Iron Ore Assn 1, L. Mornen sur, abnd 4330 ft.

COMPLETIONS

Navarro County—Lyman T. Davis' fee 1, sw part 91½-ac tr, T. J. Jordan sur, elev 399 ft, Pecan chalk 2000-2165 ft, Austin 2695-2793 ft, Woodbine series 3036 ft, sand (oil show) 3080-83 ft, tested sg & w, abnd.

Rains County—L. L. Prock et al's Grimes 1, nwc of ne 95-ac tr, Sam Yandell sur, elev 445 ft, Pecan chalk 2250-60 ft, Austin chalk 3650-3933 ft, Woodbine 4450 ft, abnd 4892 ft.

Smith County—Sells Pet. Inc.—Delta Dr. Co.'s Kay 1, c of 20-ac out of nec of Nicholas Wren sur, elev 365 ft, Pecan chalk 3550-4150 ft, Austin chalk 4941-5058 ft, sub-Clarksville 5066 ft, Woodbine sand 5290 ft, abnd 5361 ft.

TEXAS GULF COAST

FIRST REPORTS

Galveston County—J. H. Woodard, Jr.'s Kahla Est. 1, 8 mi e Port Bolivar, Bolivar Peninsula, John Shaw sur, lcn for 8500-ft test.

Liberty County—Sun's Grayburg Timber Co. 1, 5500 ft sw Robertson 1, Edward Tanner lge, bldg rds for 7350-ft test.

COMPLETIONS

Brazoria County—Pure's Greenameyer 1, ne edge Manor Lake, J. E. B. Austin sur, abnd 8655 ft.

Chambers County—Sun's Jackson 3, 2 mi w Willow Slough fld, T&NO sur 126, td 8294 ft, 7-in 8280 ft, perf 8250-80 ft, 666 bbls, ¼-in ch, tp 1160 lbs, new fld.

Tyler County—Rockland Oil Co.'s Kountze 1, 1 mi n Rockland, F. Smith sur, abnd 2502 ft.

Hardin County—Republic & Houston Oil's Elliott 1, 1½ mi sw Silsbee fld, F. P. Elliott lge, td 6923 ft, 206 bbls, ¼-in ch, tp 1425 lbs, cp 2050 lbs, disc for West Silsbee fld.

SOUTHWEST TEXAS

FIRST REPORTS

Bexar County—Cartter & Douglas' McDonald 1, E. Tejado sur, 5 mi ne Lytle, dr 100 ft on 1500-ft test, L. A. Douglas rig.

Jackson County—Pure's Cravens 1, Menefee sur, 2000 ft sw West Ganado fld, ru for 6600-ft test.

Jim Hogg County—J. F. Fouch's Palacios 1, sur 51, 1 mi se Randado, lcn for 5500-ft test. W. G. French's Pena 1, El Peyote gr, 4 mi nw Randado, dr 2420 ft on 3200-ft test. Sun's McCampbell 2, s Hebbronville, lcn.

Jim Wells County—Magnolia's Laughlin 1, R. P. Haldeman subd of Seeligson ranch, 3 mi nw Premont, lcn for 5050-ft test, company rig.

Lavaca County—Herton Oil Co.'s Hahmann 1, Wm. Taylor sur, se Moulton, lcn for Wilcox test.

Zapata County—W. H. Holland's Garza 1, Las Comitas gr, 30 mi s Mirando City, prep mi for 1800-ft test.

COMPLETIONS

Bee County—Lewis Prod. Co.'s McKinney 1, L. C. Randolph sur, 2 mi s Pettus, abnd 4500 ft.

Colorado County—Shell's Plow Realty Co. 3, Obid K. Winn sur, ab 589, 1500 ft ne No. 1, comp 144.63 bbls 55.4-gr, ¼-in ch, tp 1675 lbs, cp 1850 lbs, perf 8746-56 ft, no water, gor 12,000/1, 5½-in casing 9980 ft, td 10,251 ft, new sand Sheridan fld.

Duval County—Bancroft Oil Co.'s Murphy 1, BS&F sur 112, 15 mi ne Freer, abnd 3010 ft.

Guadalupe County—A. J. Hollifield's Willman 1, Mich Miller sur, 2 mi nw Kingsbury, abnd 2124 ft.

Jim Hogg County—F. A. Gillespie & Sons Co.'s Gutierrez et al 2, S. P. Peebles sur 582, ¼ mi w Gutierrez 1 dry hole, abnd 2778 ft.

Webb County—Smith & Story, Inc.'s Houston Oil 1-A, Laurel area, abnd 3020 ft.

NORTH TEXAS

FIRST REPORTS

Archer County — Akin-Dimock-Costley's Wells 1, nec of W. Hassell sur A-755, lcn.

Wichita County—King Oil Co.-Perkins-Cullum's Birk 1, blk 23, J. A. Ventress sur A-103, lcn 5000-ft or Ellenberger test.

Wilbarger County—J. B. H. Henderson et al's Waggoner Est. 1, H&TC sec 2, blk 13, lcn for 2400-ft test.

Young County—F. E. Butler et al's Ward 1, L. W. Ross sur A-1352, lcn. M. Eckert et al's Gadberry 1, swc ne ne TE&L sec 227, lcn; Willard 1, nwc s½ TE&L sec 227, lcn. W. R. Stafford et al's Nicholson 1, nec nw TE&L sec 225, lcn.

COMPLETIONS

Archer County—W. A. Wise et al's Abercrombie 1, blk 152, Harris subd, abnd 1354 ft.

Jack County—Alma Oil Co.'s Dees 1, Geo. Taylor sur, A-884, Bend 4495 ft, abnd 4885 ft.

Montague County—Sinclair Prairie's Clingingsmith 1, swc blk 149, J. Olabarri sur, 4 mi sw Nocona, new pool, top Canyon 1672 ft, Palo Pinto-Strawn contact 3130 ft, Bend 5662 ft, Marble Falls (?) 5918 ft, conglomerate pay 6119-31 ft, potential 1166 bbls 42-gr, open tubing.

Wilbarger County—W. B. Omohundro et al's Vaughn 1, nec se H&TC sec 29, blk 16, abnd in Ellenberger 5055-5508 ft.

Young County—J. E. McDonald et al's Ward 1, swc nw TE&L sec 277, abnd 687 ft. G. Willard Rich et al's Adam Furr 1-37, se sw TE&L sec 37, abnd 400 ft. P. B. Worthington et al's Andrew 1, near c of TE&L sec 201, abnd 895 ft.

WEST TEXAS

FIRST REPORTS

Mitchell County—G. R. Anderson Dr. Co.'s Simpson 7, nec sw H&TC sec 65, blk 97, lcn.

Upton County—Geo. E. Farley et al's Damron 1, c ne sw CCSD&RGNG sec 192, blk F, lcn, Mesquite Oil Corp.'s Neal Bros. 1, swc C&M Ry. sec 34, 1½ mi n Rankin, lcn.

COMPLETIONS

Borden County—B. C. Mann et al's Canning-Dennis 1 (5195-ac lse), c nw ne H&TC sec 151, blk 25, brown lime 2435 ft abnd in sul w 2650-60 ft.

Fisher County—Al Landers-H. J. Eisele's Newman-Coronado 1, sec nw T&P sec 8, blk 20, elev 2114 ft, abnd 4981 ft.

Martin County—Magnolia's Teague 1, nec labor 10, league 260, Borden CSL, elev 2901 ft, anhydrite 1930 ft, Yates 2750 ft, brown lime 3930 ft, solid lime 4345 ft, Clear Fork lime 6100 ft, abnd 7701 ft.

WEST CENTRAL TEXAS

FIRST REPORTS

Coleman County—J. O. Hart & Sons' Peyton 1, sw part lot 7, Sam B. Mixon sur A-522, sp.

Shackelford County—J. W. Keys et al's Smalley 1, sw sw se E. T. Ry. sec 13, lcn. U. L. Miller et al's Rodriquez 1, near c ne¼ E. T. Ry. sec 12, lcn.

COMPLETIONS

Hamilton County—A. J. Caldwell et al's Jones 1, near se cor 80-ac tr, W. H. Browder sur, abnd 2999 ft.

Jones County—King Oil Co.'s Olson 2, nwc ne BBB&C sec 189, new shallow pay North Avoca pool, sandy-lime pay 1960-74 ft, shot 60 qts nitro 1960-71 ft, pump 40 bbls oil 10 bbls water initial.

Palo Pinto County—W. K. Gordon et al's Nolan 1, ne se se T&P sec 86, blk 3, new pool, gas sand 3445-55 ft, td 4067 ft, pb to 3466 ft, shot 40 qts nitro 3450-62 ft, initial 1,185,000 ft gas.

Ask 40-Acre Spacing for Rhodes Pool, Cochran County

Honolulu Oil Corporation has requested 40-acre proration units for wells in the new Rhodes pool, Cochran County. At a hearing before the Texas Railroad Commission last week, the company requested that it be allowed to space wells 440 feet from lease lines and 880 feet apart. Oil would be distributed on acreage and potential, with 50 percent allocated on each factor.

The first well was completed March 13, 1941, producing from 5114 feet. Top of the lime is at 5078 feet.

MEN IN THE INDUSTRY'S NEWS

R. B. HIGH, vice president of Shell Pipe Line corporation for the past two years, has been named special Washington representative for Shell Union Oil Corporation and affiliated companies. He is being succeeded as vice president of Shell Pipe Line Corporation by H. H. Anderson, vice president of Shell Oil Company in charge of personnel activities east of the Rocky Mountains.

R. B. High

A graduate engineer of University of California, High supervised construction of the majority of Shell Oil Company refineries in the United States, and has been operating manager of three of them. He will make his headquarters at 414 Washington Building.

H. H. Anderson

Anderson started with the company in 1917 as a field worker in California's Coalinga field, and in 1925 advanced to chief engineer of the production department on the Pacific Coast. In January, 1929, he was selected to supervise planning and erection of the company's San Francisco building. For several years thereafter he participated in a broad range of company organization work that brought him intimately into contact with all phases of activity in the United States and Mexico. He was made vice president in 1933. He will make his headquarters in Houston.

HENRY W. BOGGESS, director of safety for Sinclair-Prairie Oil Company, Tulsa, was reappointed the past week as chairman of safety activities for the 1942 International Petroleum Exposition by W. G. Skelly, president. Safety awards will be given in production, refining, marketing, pipe line and transportation branches of the industry.

WILL A. MORGAN, assistant to the advertising manager of Continental Oil Company, has been named advertising manager. Born in Lucas, Iowa, he received his grade and high school education in Lafayette, Colorado, and Butte, Montana, later attending business school in El Paso, Texas. He was associated for several years with Mountain States Telephone & Telegraph Company at Butte and Denver, and later was engaged in sales and other work in El Paso. He joined Continental Oil Company in 1935 as a clerk in the advertising division, and was made assistant to the advertising manager three years later.

DAVID B. CRAWFORD, president of Parkersburg Rig & Reel Company, died May 3 at his home in Parkersburg, West Virginia. He came from Ireland when 15 years old, and in 1899 joined his brother, John M., in the company the latter founded two years earlier. David Crawford was made secretary and treasurer of the company in 1914, and in 1936 was elected president. He has been associated with the producing end of the oil business, and at various times has been a director of different oil companies.

B. E. (BUDDY) JOHNSTON, 43, for many years representative of American oil equipment manufacturers in South America, died recently. His home abroad was at Port au Spain, and in the United States at Houston. On his way to Houston to catch a plane for South America, he died as a result of heart trouble at Hempstead, Texas. At the time of his death, he represented Globe Oil Tools Company in South America.

U. B. BOUCKE, controller of Tide Water Associated Oil Company, was named a vice president of the company last week. Other officers, all re-elected, are William F. Humphrey, president; C. R. Barton, L. F. Bayer, J. D. Collins, L. C. Decius, B. I. Graves, K. R. Hankinson, George I. Hanks, L. D. Jurs, R. B. Pringle and Edward H. Salrin, vice presidents; William J. Burker, secretary; K. R. Hankinson, treasurer, and J. P. Edwards, executive secretary.

JOHN H. COLLIER, vice president in charge of manufacturing for Crane Company, Chicago, has been named president, succeeding the late Charles B. Nolte. He joined the company in 1903 on leaving school, starting as core-maker's helper. He was named general manager of the Bridgeport plant in 1917; was made president of Cie Crane, Paris, and chairman of Crane, Ltd., London, in 1929, and became vice president in charge of manufacturing in 1933.

HENRY CARTER REA, former research geologist for Seaboard Oil Company, is now engaged in independent work with headquarters at 4035 North State Street, Jackson, Mississippi.

H. H. BROWN, former assistant purchasing agent for Frick-Reid Supply Corporation, Tulsa, has been made manager of inventory, heading a new department to maintain continuous control of store, warehouse and yard inventories. A. F. Stadler succeeds Brown as assistant purchasing agent.

W. H. ALLEN, former head of the sales staff of Fred E. Cooper, has opened Mid-Continent offices at Tulsa for Fafnir Ball Bearing Company, New Britain, Connecticut.

R. ELMO THOMPSON, former executive vice president for Sunray Oil Company, Tulsa, has resigned to become president of Superior Oil Corporation, Tulsa, succeeding John L. Essley, who becomes board chairman and vice president. Thompson joined Sunray Oil Company in March, 1939, on leaving an executive position with the First National Bank & Trust Company, Tulsa. Essley was president from May, 1934, to May, 1941. Other officers of Superior Oil Corporation are F. A. Bodovitz, vice president and general manager; N. C. Cross, secretary-treasurer, and S. Price Gray, assistant secretary-treasurer.

GLENN J. WOOD, president of Wood Oil Company, Tulsa, was elected a director of Sunray Oil Corporation, succeeding R. Elmo Thompson who resigned to become president of Superior Oil Corporation. L. W. Bennett, treasurer of the company, was also elected to the board. Directors elected: C. H. Wright, president; H. S. McClintock, vice president in charge of land and geological departments; Edward Howell, vice president; W. D. Foster, secretary; L. W. Bennett, treasurer, and Sibyl Wengle, assistant secretary.

HAROLD E. COOPER, of Fred E. Cooper Company, Tulsa, discussed "Review of a Nine-Month Tour of the West Indies, Central and South America" at a luncheon meeting of the Tulsa Geological Society May 8.

CARL BUERBAUM, engineer for Lane-Wells Company, Tulsa, was called to active duty, effective May 11, and will report to Fort Sill before being transferred to a field artillery battery in Southern California where he holds the rank of captain in the Reserve Corp.

C. B. ROACH, Shell Oil Company, Lake Charles, Louisiana, last week discussed "A Subsurface Study of the Jennings Dome, Acadia Parish, Louisiana," before the Houston Geological Society.

W. F. SLATER has been named Tulsa district representative for Kobe, Incorporated, to fill a vacancy caused by the transfer of H. K. Ihrig to Mt. Vernon, Illinois, as manager of the Illinois - Indiana - Kentucky territory. After attending the engineering schools of the University of Tulsa and the University of Oklahoma, Slater was placed in charge of operations of Slater Oil Company in the Glenpool area. He

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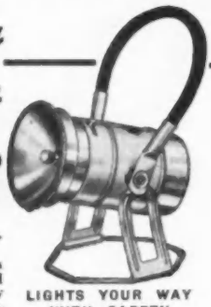

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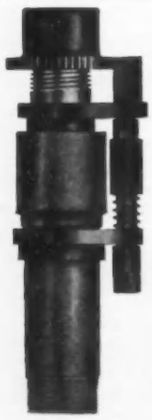

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MEN IN THE INDUSTRY'S NEWS

joined the S. M. Jones Company in 1936 as sales representative, and in 1938 was placed in charge of that company's California territory. He later became advertising manager for Walter O'Bannon Company, which position he held until his appointment with Kobe, Incorporated.

H. A. SHERMAN, president of Schermerhorn-Winton Company, Tulsa, last week announced change of the company's name to Kenwood Oil Company.

A. PAUL KITCHIN, director of the Dallas Division of the Federal Bureau of Investigation, will discuss "Prevention of Industrial Sabotage—the Function of the FBI in National Defense," before the East Texas chapter of the American Petroleum Institute's Division of Production May 13. The meeting, which will be preceded by a stag dinner at the Kilgore Hotel, will be held in the Kilgore High School auditorium. A motion picture, "Sinews of Steel," will be shown.

RALPH M. HOFFMAN, assistant to the president of Link-Belt Company since January, 1940, has been made a vice president with general direction and supervision of sales. A 1911 mechanical engineering graduate of the University of Minnesota, he joined the company in 1923 as manager of Link-Belt Meese & Gottfried Company's Seattle branch. He served in that capacity until 1931, the name of the subsidiary meanwhile becoming Link-Belt Company Pacific Division, and from 1931 to 1939 served as vice president and sales manager of the subsidiary.

C. C. RODNEY, 70, retired driller, died April 20 at Electra, Texas, where he had resided since 1921.

M. F. HAZEL, West Texas district sales manager for Oil Well Supply Company during the past four years, has been appointed sales manager for the East Texas, North Louisiana and Arkansas district, with headquarters at Shreveport. He joined the company in 1930 at the Oil City (Pennsylvania) manufacturing plant, and covered many of the oil fields of Oklahoma and Texas, first as a service engineer and later as a sales manager. He was located in East Texas, North Louisiana and Arkansas for several years before he was made sales manager of the West Texas district.

A. F. ALTENAU, chief production clerk for Sun Oil Company in the Dallas district, received the Everts Award, a gold watch in recognition of his services as secretary-treasurer of the Dallas Central Dads Club.

JESSE E. SIMMONS, 35, West Texas geologist for Continental Oil Company and a resident of Midland, was fatally injured May 6 in an auto crash near Ozona. He was with the company at Denver before moving to West Texas six years ago.

F. H. McGUIGAN, geologist for Lion Oil Refining Company, has been transferred from El Dorado, Arkansas, to Midland, Texas, where the company is establishing a district office. He was formerly stationed in West Texas with Shell Oil Company.

JAMES H. GRIFFIN, former chemical engineer with Baroid Sales Division, Tulsa, is now production engineer for Dow Chemical Company at Freeport, Texas.

Ted Sutter, vice president and general manager of Baker Oil Tools, Inc., and international president of the Nomads, visited Tulsa recently to complete plans for an international meeting of Nomads to be held May 20, during the mid-year meeting of the American Petroleum Institute. Pictured with Sutter, shown in the center, are Gerald Westby, vice president of the Tulsa Nomads chapter, at the left, and W. G. Green, Tulsa chapter president, at the right.

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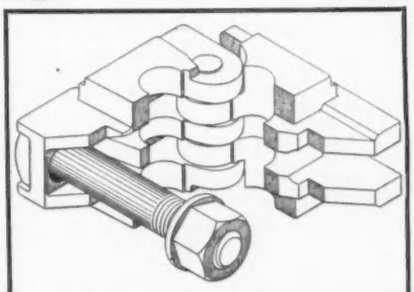

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H. N. GREIS, trustee for Deep Rock Oil Corporation, Tulsa, has been elected president of the company, following its emergence from long-time receivership. Other officers named include, W. R. Francisco, executive vice president; Richard K. Huey, vice president in charge of production; W. E. Moody, vice president in charge of refining; B. L. Majewski, vice president in charge of marketing; Odville O. Carr, secretary-treasurer; H. R. Shanks assistant treasurer, and R. E. Copman, assistant secretary.

BEN ALTMAN, district editor for THE OIL WEEKLY, was elected president of the Junior Group of the Engineers Club of Tulsa, succeeding Leo Johns, formerly with The Carter Oil Company and more recently with Vega Aircraft Company in California. Marvin E. Hanson, purchasing agent for Braden Winch Company, was named vice president, succeeding Scott Thompson, W. C. Norris, Inc., and C. D. Schmidt, engineer for Oklahoma Natural Gas Company, was elected secretary-treasurer.

GERALD H. WESTBY, president for Seismograph Service Corporation, will give his general observations and comments pertaining to the petroleum industry in South America and its relation to international affairs on the regular noon luncheon program of the Engineers Club of Tulsa May 12.

J. E. DYER, safety engineer, The Sun Oil Company, discussed "Preventive Methods," in one of a series of lectures on how to reduce industrial accidents, being given at the University of Tulsa April 29, and sponsored by the Petroleum Safety Council of Tulsa and three schools, University of Tulsa, Oklahoma University and Oklahoma A. & M. College.

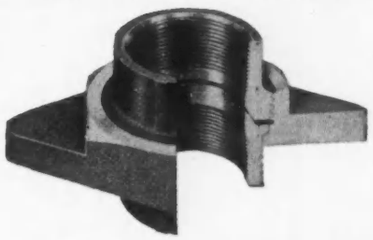
RALPH WADE, lease records division of The Carter Oil Company, has been transferred from Tulsa to Wichita where he will be in the scouting division.

SAMUEL S. BRUCE, JR., has been appointed sales representative of The Duff-Norton Manufacturing Company, with headquarters at the company's general offices in Pittsburgh. A graduate of Massanutten Military Academy and Franklin and Marshall College, Bruce was formerly with a contracting company.

S. E. SNOW, manager of Oil Well Supply Company's Houston store since 1938, has been appointed sales manager of the West Texas district, with headquarters at Odessa. The promotion brings Snow back to the area in which he represented the company from the time he joined it in 1926 at Best, Texas, until he transferred to Beaumont in 1935 as manager of that branch.

CATAWISSA

LUG NUT UNIONS



Forged from High-Grade Steel Bars . . . Can be applied with either Hammer or Wrench . . . Always presents flat striking surface . . . Shape of Lug prevents distortion . . . Heavy, Coarse Acme Threads for quick opening and closing—Non-Freezing. . . .

The Union Seat is a ball on the male end to a 55° angle on the female end . . . Hand Ground. . . .

Indispensable on Steam Lines where using a wrench would be hazardous due to high temperature and pressure and on buried lines and other applications where a half turn of the Union Nut with a wrench would be difficult. *Write us today for sizes and prices!*

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Inexpensive
COMFORT
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HOTEL
CLARK

Every facility and appointment of this hotel has been planned to afford its guests the maximum of comfort and convenience. Large enough to house a thousand persons, yet small enough to permit personal service and friendliness to be truly emphasized.

• Five minutes from Union R. R. Terminal. 15 minutes from "Hollywood."

ROOMS
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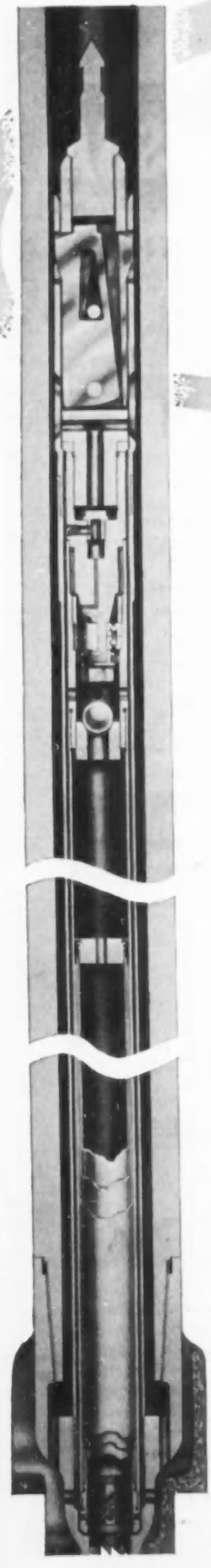
BATHS

Sensible Rates
from $2.50



Available Now --FOR EXPORT:

THE JOHNSTON-SOLL Telescoping Core Barrel

Now—for the first time—the Johnston-Soll Telescoping Core Barrel is available for export. This tool incorporates a telescoping sectional barrel which insures maximum core recovery regardless of formation conditions...helps eliminate coring inaccuracies...saves time and expense on all coring operations. Eight years of phenomenally successful performance in United States fields have thoroughly proven the efficiency, ease of operation and accuracy of this tool. *It is available in either wire line (fully retractable) or conventional types, as desired.*

THREE TIMES BETTER CHANCE OF CORE RECOVERY

Telescoping Barrel—The three sections of the inner barrel (see illustration) are arranged in such a way that, should the core stick in the barrel while cutting, the plugged section will move upward, allowing the core to continue entering the tool in the normal manner. Thus, the core can stick as many as three times without affecting ultimate recovery, greatly reducing chances of misruns in hard-to-core formations and insuring a more accurate core of the sand. Each time, the pressure exerted by the stuck material simply forces a section of the barrel upward, and the tool continues to receive the portion being cut.

WASHING ACTION ON CORE PRACTICALLY ELIMINATED

Since it is mechanically locked in place, retention of the retractable barrel in coring position is completely independent of the pump pressure applied. Circulation velocity at the bit may thus be reduced to a minimum, eliminating the danger of washing out the core being cut.

FREE-FLOATING BARREL

Inner barrels float freely on bearing assembly, eliminating common source of core distortion and breakage. Ball and needle bearings support barrels inside driving member, preventing rotation. Oil reservoir provides for complete bearing lubrication while coring. On the retractable type, a rugged locking device above bearings holds coring assembly rigidly in place, yet can be easily released.

The Johnston-Soll Telescoping Core Barrel* is the ideal coring tool for all overseas drilling operations, and complements the Johnston Tester in giving operators complete, accurate formation facts for sound exploration and development programs. Write for complete details and prices.

*Sold foreign by M. O. Johnston Oilfield Service Corp. exclusively. Serviced in the U. S. by Soll Core Barrel Co.

FORMATION AND CASING TESTING — THE JOHNSTON TESTER IN

M. O. JOHNSTON *Oil Field Service Corp.*

3117 SAN FERNANDO ROAD, LOS ANGELES, CALIF.

"WHY SET CASING BEFORE YOU KNOW?"

Squeaks from the Bull Wheel

Oil Weekly Enters Toad in '41 Derby

"The Oil Weekly, one of the nation's outstanding petroleum industry publications, of Houston, Texas," says The Coalinga (California) Daily Record, "is the first organization to enter an out-of-state toad in the 1941 Horned Toad Derby.

"The Texas speedster, which carries the title of the publication, is en route to Coalinga by air mail and is addressed to George O. Suman, of the Tide Water Associated, who will train the Texas entry.

"Suman received notification today of the toad's dispatch from Houston, with the following comment in the communication from Ray L. Dudley, publisher of The Oil Weekly: Suman will manage the toad and Alice Grace will be the official trainer.

"Dear George:

"Thank you very much for offering to handle The Oil Weekly entry in the Horned Toad Derby at Coalinga. I am sending you check for $5.00 covering entry fee, etc.

"Your generosity in offering to take care of the feeding and expense of 'The Oil Weekly' is very much appreciated. I sincerely hope that it does not impose any burden on the transport division of Associated in getting food to this entry but for gosh sake don't let anybody feed 'The Oil Weekly' any buckshot. If you have some ether pills or some helium pills may I suggest that they might add a little to 'Oil Weekly's' pep, or is it considered unethical to use such stimulants?

"Very truly yours,
"Ray L. Dudley,
"Publisher, The Oil Weekly."

Willing Victim

"Just suppose we wives should go on a strike?"

"Go right ahead. I've got a peach of a strikebreaker in mind."

Deep Mystery

What made the Jacks separate?
Nobody knows.
How terrible.

How Dare You!

Ella Wheeler Wilcox once opened a new set of verses with a line reading: "My soul is a lighthouse keeper," but, unfortunately, the printer set it up: "My soul is a light housekeeper."

She never forgave him.

Tall Story

"It was so cold where we were that the candle froze and we couldn't blow it out."

"Where we were the words came out of our mouths in pieces of ice, and we had to fry them to hear what we were talking about."

Reversed

Well, Sam, I see you're back for fighting with your wife. Liquor again?

No, sur, Judge, she licked me dis time.

Just Heels

"Who's the girl with the French heels?"

"She's my sister, and those guys ain't French."

Very Slight Error

"What heavenly swing—let's dance."

"That ain't swing—the waiter just dropped out dinner."

Easy Repair

Mister (hurrying to get dressed for a party)—Ouch, I bumped my crazy bone.

Missus—Well, just part your hair on the other side and it will never show.

One Track

"How do you like your new boss?"

"Oh, he ain't so bad, only he's kinda' bigoted."

"Well, he thinks words can only be spelled one way."

Answer's No

Breathes there a man with soul so dead
Who never turned around and said,
"Not bad."

Fortunate

Your wife hit the ceiling when you come in at this hour?

Probably. She's a poor shot.

It's a Clean Life!

Junior, go wash your hands and face.
Aw, I just took a bath this morning.
Then go wash the bathtub.

Angler Logic

"What for did you tell him there was plenty of fishin' when there aren't two trouts in the stream?"

"Well, an' the less fishes there is, the more fishin' to get 'em ain't there?"

Quite So!

A retired cheesemonger, who aped nobility and disliked any reference to the trade by which he had made his fortune, was conversing with whimsical Charles Lamb, when the latter tried to interest him in a discussion of the Poor Law.

"You must bear in mind, sir," haughtily objected the one-time cheese magnate, "that I have got rid of all that nonsense you refer to as the milk of human kindness."

"I know," rejoined Lamb, "you turned it all into cheese."

Weight

Madam, you have an iron constitution.

I've often wondered what made me so heavy.

Success Story

The corpulent self-complacent Irishman sank into his most comfortable chair and remarked to his wife, "Well, Kate, me dear, life to me seems to have been one long run of prosperity. First I was plain Hooley; then I married you and became Mr. Hooley; then I was made Councillor Hooley, and later Alderman Hooley. To cap the lot, as I wint into church yisterday all the congregation with one accord rose and sang, 'Hooley, Hooley, Hooley!' ".

Preference

Host—What kind of a chaser would you like?

Lady guest—Well, I prefer him tall, dark and handsome, and with a lot of money.

Gotkool
WATER CANS
& COOLERS
GOTT Water Coolers are the convenient way to keep drinking water handy to the worker, protect it from impurities. Their exclusive construction keeps water cool for long periods. Snug fitting large removable top, handy non-leaking push button faucet. GOTT Water Cans for handy field use. Your Supply Store has them, get one today! . . . .
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WATER COOLER
GOTT WATER COOLER
Made in 3, 5, 8, 10, and 20 gallon sizes.
GOTT WATER CAN
Made in 1½, 3, 5, and 10 gallon sizes.
H. P. GOTT MFG. CO.
WINFIELD, KANSAS
KEEP PURE DRINKING WATER ALWAYS HANDY

THE FEWER THE BETTER

Interruptions to drilling due to rock bit cutter wear or failure are costly propositions. The fewer of them there are in the course of drilling a hole, the better-looking the cost sheet. Even a slight increase in the amount of hole-per-bit makes a big difference.

That is why so many wells are drilled these days with bit cutters of Nickel-Molybdenum steels of the SAE 4600 and 4800 series. These steels can be carburized and heat treated to give an exceptionally hard, wear resistant case combined with a core of high tensile strength and toughness.

The result is cutters that resist rapid abrasion wear and meet whatever comes along without premature breakage; in short, cutters that give more hole-per-bit regardless of formation.

Complete information on these Molybdenum steels and others which are establishing service records in many oil field applications are contained in our technical book "Molybdenum Steels in Oil Production", which will be sent free on request.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS
MOLYBDIC OXIDE—BRIQUETTED OR CANNED • FERROMOLYBDENUM • CALCIUM MOLYBDATE

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MOLY

NOTES FOR THE Equipment Buyer and User

Safety Joint
HYDRIL COMPANY

A safety joint for use in drilling and fishing operations, designed with bore large enough to allow wire-line coring equipment, surveying instruments and other tools to pass through it into the drill collar, has been announced by Hydril Company, 714 West Olympic Boulevard, Los Angeles.

The large-diameter bore is obtained by use of a positive-engagement clutch that employs a series of hardened, precision-ground taper pins as a means of locking the mating halves of the joint against relative rotation.

When the tool is made the amount of torque required to disconnect the two halves is permanently established by screwing them together to a predetermined tightness, and is considerably less than that required to unscrew a tool joint of corresponding size. The taper pin holes are then drilled and line reamed on the mating diameters of the box and pin members. The taper pins float free in the clutch member, so that they can seek accurate individual alignment, and are held in place in their respective taper holes by pressure of a heavy spring. The fit thus obtained is designed to prevent backlash and insure rigidity of the joint.

If the tools become stuck, release is accomplished by means of a dart pumped down the drill pipe, or by dropping a dead weight if circulation is shut off. Pump pressure on the dart, or the dead weight, depresses the clutch, drawing the taper pins out of engagement. The two halves of the joint then can be unscrewed, and the upper portion of the string with the upper half of the safety joint removed from the hole. The dart or weight is retained in the upper half of the safety joint and is removed with the drill string.

Water Cooler
WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY

An explosion-proof water cooler for use in Class 1, Group D hazardous locations has been announced by Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pennsylvania.

Available in three models, it has a stainless steel top, steel body and hermetically-sealed condensing unit. Capacities are 8.2, 9.8 and 18.9 gallons of water per hour cooled from 80° to 50° F. Cycling-control mechanisms and overload protective devices are enclosed to provide an explosion-proof feature, as no arcing can develop in the cooler to ignite explosive mixtures in the surrounding atmosphere.

Motor and compressor are water-cooled by a counter-flow double-tube condenser wrapped around motor shaft. Automatic flow control regulates the flow of the condensing water when condensing unit is running, and stops the flow when unit is idle.

Circuit Breakers

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pennsylvania, has issued Bulletin 33-220 giving six pages descriptive of oil circuit breakers for starting motors. General types of control are listed in the order of their severity on the breaker contacts. Wiring diagrams show common types of control schemes. Distinctive features, construction and operation of the breakers are described. Overload and under-voltage protection are discussed, and blackline drawings show position of parts and give physical dimensions. Maximum current and voltage ratings for the various styles are listed with complete instructions for ordering.

Materials Handling

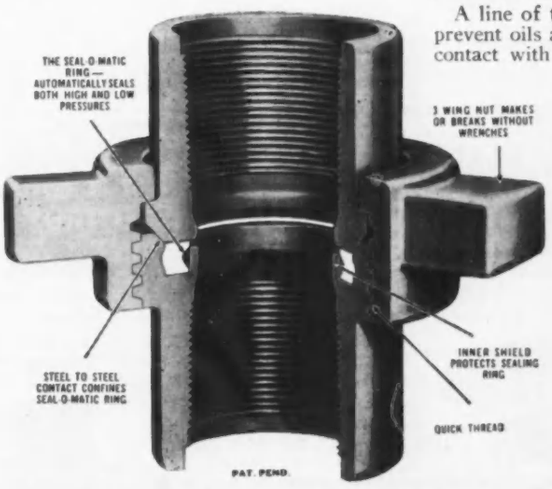
Clark Tructractor Division, Clark Equipment Company, Battle Creek, Michigan, has issued a 16-page defense issue of its house magazine, "Clark Pictorial," showing applications of its towing tractors and industrial trucks.

Union
THE GUIBERSON CORPORATION

A union that utilizes the force of pressure to automatically effect a seal has been announced by The Guiberson Corporation, Dallas. The seal is obtained by means of a flexible, molded oil-resisting ring, designated Seal-O-Matic.

In application, a positive seal is obtained independent of the tightness of the wing nut. The ring may be replaced in the field, and the union is designed so that maximum misalignment of the union will not disturb the seal.

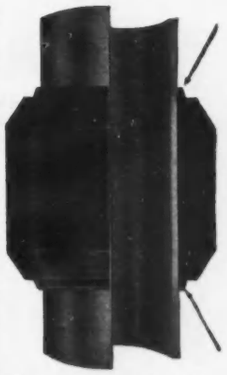
Hubs are turned of high-tensile solid steel bars. The union is available in 2-, 2½-, 3- and 4-inch sizes.


THE SEAL-O-MATIC RING — AUTOMATICALLY SEALS BOTH HIGH AND LOW PRESSURES
3 WING NUT MAKES OR BREAKS WITHOUT WRENCHES
INNER SHIELD PROTECTS SEALING RING
QUICK THREAD
STEEL TO STEEL CONTACT CONFINES SEAL-O-MATIC RING
PAT. PEND.

Guiberson Corporation's Seal-O-Matic Union

Lip Protector
PATTERSON-BALLAGH CORPORATION

A lip protector to prevent ringing or grooving of drill pipe immediately above or below drill-pipe rubber protectors has been announced by Patterson-Ballagh Corporation, 1900 East 65th Street, Los Angeles. Such scoring of drill pipe is usually caused by mechanical or chemical action, and has a tendency to weaken the pipe.



An extended lip is molded as an integral part of the rubber protector at the top and bottom inner periphery to prevent any action from taking place at the inner edge of the protector. The lip is designed to form a sealing ring to prevent mud from getting behind the protector. The extension of the lip at both ends of the protector adds approximately 15 percent more contact area to give more grip to the pipe.

Circuit Breakers

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pennsylvania, has issued Bulletin 33-680, describing compressed air circuit breakers up to 34.5 KV, 1,500,000 KVA interrupting capacity for indoor use. Features, construction and operation are discussed in detail with special attention given to the compressed-air mechanism. Diagrams give physical dimensions and typical layouts.

Gloves
RESISTOFLEX CORPORATION

A line of transparent gloves designed to prevent oils and solvents from coming into contact with the skin has been announced by Resistoflex Corporation, Belleville, New Jersey.

Made of Resistoflex PVA, a substance described as offering high resistance to tearing and abrasion, they are designed to resist organic solvents or active solvents, such as benzol, carbon disulphide and chlorinated hydrocarbons. When soiled, they may be cleaned in lacquer thinner, turpentine, carbon tetrachloride or gasoline. While not as flexible as rubber or synthetic rubber gloves, they are described as sufficiently flexible to afford unrestricted movement of the fingers and not to cause undue awkwardness or discomfort. The gloves are available in sizes 8, 9,

OIL COMES OUT

WATER STAYS IN FORMATION

IT'S BEING DONE

Both in pumping and Gas lift wells

FREE DATA

Complete information without obligation upon request

MERLA TOOL CORP.

P. O. BOX 2576

DALLAS, TEXAS

NOTES FOR THE Equipment Buyer and User

10 and 11, the three smaller sizes being produced in 10½- and 14-inch lengths, while size 11 is made in 10½-, 14- and 18-inch lengths.

Mud-Gun Fitting

PATTERSON-BALLAGH CORPORATION

A multi-jet discharge fitting for mud guns for rotary drilling has been announced by Patterson-Ballagh Corporation, 1900 East 65 Street, Los Angeles.

P-B Mud Gun Manifold

Designated mud-gun manifold, it consists of a steel assembly of a manifold and rubber-lined nozzles. The assembly, screwed into the discharge pipe, is designed to increase the jetting effect four-fold by breaking up and directing the mud flow into four smaller streams.

The manifold may be used in jetting beneath the surface of the mud pit to provide a more uniform mixture, to lessen the amount of oxygen drawn into the mud, and to minimize the amount of air drawn into the pump suction.

Lease Power

Caterpillar Tractor Company, Peoria, Illinois, has issued Bulletin 6737, "The Nearest Thing to Free Power," discussing use of lease fuel to pump wells. It shows use of diesels, natural gas engines and electric sets employing lease fuel, either cleaned fuel oil or natural gas.

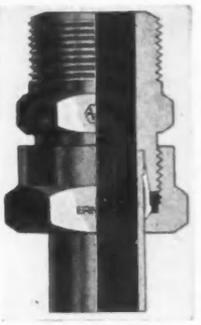
Strip-Chart Recorders

The Bristol Company, Waterbury, Connecticut, has issued Bulletin 570, giving 16 pages descriptive of strip-chart recorders. It describes the instruments, used for measuring and recording on a six-inch strip chart DC amperes and milliamperes, DC volts and millivolts, pressure, liquid-level, flow, mechanical motion, and for remote recording. Drawings are used to illustrate the applications, and information is given on the measuring elements, chart drive, types of cases and chart ranges available.

Fitting

THE WEATHERHEAD COMPANY

A fitting designed to provide a safety factor when used with tubing, designated Ermeto safety fitting, has been announced by The Weatherhead Company, Cleveland. It is being made available as nipples, connectors, unions, elbows, tees and sleeves for tube diameters of from ⅛- to 1½-inch.



In application, a cutting edge of a hardened ring shears a groove into the outer surface of the tube, resulting in a joint that is designed to be leak-proof and of a nature that it cannot be pulled apart. No flaring, threading, soldering or welding is necessary, and connections made with the fittings may be taken apart and remade without adversely affecting the tightness of the joint.

Synthetic Rubber

Hydrocarbon Chemical & Rubber Company, Akron, Ohio, has issued a 20-page compounding manual for Hycar O. R., an oil-resistant type synthetic rubber. Subjects discussed are accelerators, adhesion to metals, antioxidants, blending with other materials, calendering, cements, examples of compound types, fillers, fabrication, heat resistance, lamination, mastication, mixing, molding, pigments, plasticizers, processing, softeners, solvents, specific gravity, tubing, vulcanization, and waxes.

Cutting Tools

McKenna Metals Company, 224 Lloyd Avenue, Latrobe, Pennsylvania, has issued Catalog 41, giving 32 pages descriptive of its line of steel cutting tools and blanks. It lists specifications for five styles of blanks, 28 standard tools, and several semi-standard tools, as well as for lathe and grinder centers supplied with Kennametal nibs. New tools de-

Get the EXTRA POWER of the New 30 K.V.A. WITTE DIESELECTRIC PLANT

Here's extra power for the oil industry at amazingly low cost! This large 30 K.V.A. WITTE is a masterpiece of quality construction. Gives you the utmost in dependability and low cost operation wherever you set your rig.

Gives you power and light for less than ONE CENT a kilowatt.

Rugged, compact. OTHER WITTE Diesels—3 to 30 K.V.A., 4 to 40 H.P. — Vertical or Horizontal. 1, 2 and 4 cylinders. Manual control, electric starting or fully automatic.

(SEE COMPOSITE CATALOG, PAGE 2523)

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Special Equipment for Trouble Shooting

All shots safely and accurately placed with the Howard Greene Line Indicator. Patentee of the Bolshevick Greene Cave Catcher.

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For **VIBRATION-PROOF FASTENINGS** *ON* **OIL FIELD EQUIPMENT**

Elastic Stop Self-locking Nuts put an end to maintenance troubles resulting from loose fastenings. They can not be loosened by vibration, shock loads, or exposure to weather. Available in all standard sizes.

SPECIFY THEM ON NEW EQUIPMENT AND USE THEM FOR REPLACEMENT

Sold by leading supply houses.

Factory stocks in Houston and Los Angeles.

CATALOG contains a graphic explanation of the Elastic Stop principle, presents test and application data, and lists the complete line of nuts. • Write for a copy.

Also see data in Composite Catalog

ELASTIC STOP NUT CORPORATION
2360 VAUXHALL ROAD • UNION, NEW JERSEY

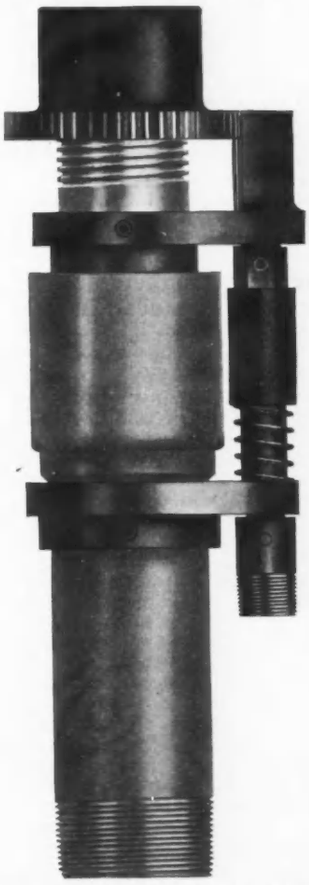
Elastic Stop SELF-LOCKING NUTS

scribed include new styles of facing tools for turret lathes, new styles of box turning tools, tools for shell turning in automatic lathes, and a series of boring tools.

Packing Nut Tightener

BOWEN COMPANY OF TEXAS

A packing nut tightener, for use with the company's automatic line wiper when used in a position elevated some distance



Bowen's Packing Nut Tightener

above the derrick floor, has been announced by Bowen Company of Texas, Houston.

The device is designed to enable the swabbing or cleanout crew to keep the correct pressure on the packing in the stuffing box at all times, providing a factor of safety and lengthening the life of the packing elements. Its installation does not affect the automatic tripping and setting features of the line wiper.

New Rubber Available to Equipment Manufacturers

Murray Rubber Company, Houston, has announced availability of Hycar O.R., a synthetic rubber produced by Hydrocarbon Chemical & Rubber Company.

According to officials of Murray Rubber Company, Hycar is produced by an exclusive polymerization process which converts unsaturated hydrocarbon, butadiene, to synthetic rubber having many of the essential and better physical properties of natural rubber in addition to many important properties which natural rubber cannot possess.

The availability of this synthetic rubber is of particular interest to oil industry equipment manufacturers because

Designed For The Oil Industry

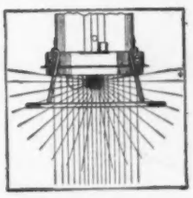
JUSTRITE "TWIN-BULB" APPROVED SAFETY LANTERN

World's Finest Portable Light

Model No. 51W

APPROVED
U. S. Bureau of Mines (Approval 1017)
Underwriters' Laboratories (Class 1, Group D)

TWO BULBS INSTANTLY AVAILABLE



Either bulb gives light to sides plus powerful beam at same time. Extra bulb replaces other bulb at touch of the switch — no need to change position of lantern. Extra bulb can be equipped to give wide, diffused light or a colored beam, if desired.

Positive "Trouble-Free" Switch is entirely new in design. Controls both bulbs.

THROWS LIGHT AT ANY ANGLE

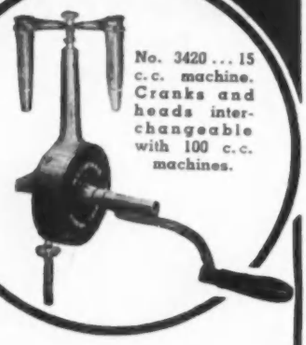
Body of lantern swings on center pivot. Lantern can be carried, stood on its base or hung with the light directed where required.

Lantern uses two bulbs (Mazda 502 or 27) and standard lantern battery.

Stocked By All Supply Stores

JUSTRITE MANUFACTURING CO.
2045 Southport Ave. Chicago, Ill.

For QUICK, ACCURATE TESTS
Use CURTIN CENTRIFUGES



No. 3420 ... 15 c.c. machine. Cranks and heads interchangeable with 100 c.c. machines.

Simple in design . . . Ruggedly built . . . Require no special care . . . Gear Ratio and throw of crank produce required speed with no strain. Curtin Centrifuges meet all **A.S.T.M. STANDARD METHOD D-96-40** and **A.P.I. CODE NO. 25** requirements. Full descriptive literature upon request.

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"THE EXAMINATION OF FRAGMENTAL ROCKS"

by

Frederick G. Tickell

Professor of Petroleum Engineering at Stanford University

An outline of the physical properties of fragmental aggregates and of their mineral constituents, this book is a laboratory manual and guide for students, geologists, petroleum engineers, chemical engineers and microscopists —in fact for all those interested in a practical treatment either of identity or of size and shape relationships of fragmental rocks.

Fabrikoid Covering — 154 Pages

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defense industries are drawing heavily on the supply of established synthetic rubbers, and because Hycar shows excellent resistance to swelling and deterioration in the presence of crude oil and gasoline. Under the supervision of Murray Rubber Company, a series of tests have been completed which are said to substantiate claims made for Hycar. In one test, a sample of Hycar was placed in crude oil and heated to 220° F. for 12 hours, at the end of which it showed no swell and only slight reduction in tensile strength.

Lane-Wells Company Opens Branch at Hawkins, Texas

Lane-Wells Company has opened a truck station at Hawkins, Texas, according to Morton T. Higgs, Gulf Coast division manager. L. A. Gratehouse is operator in charge, and the address is Cobbs Garage, Hawkins.

Four New Members Join New York Nomads Chapter

The New York chapter of Nomads held its monthly meeting and luncheon May 5. Russell D. Heath, Westinghouse Electric International Company, who presided, read an invitation from the Tulsa chapter asking New York Nomads to be guests of the Tulsa organization during the API midyear meeting at Tulsa.

John M. Crawford, Parkersburg Rig & Reel Company, Herbert S. Kieswetter, of United States Rubber Export Company, and Littleton C. Barkley of Manhattan Rubber Manufacturing Division, Raybestos Manhattan, Inc., were elected to regular membership. Charles A. Swartz, National Transit Pump & Machine Company, was elected to associate membership.

George R. Woods made a brief talk on the value of Nomads organization. A golf outing for June was discussed, and the proposal turned over to the golf committee for final decision.

Specialties

Harman Manufacturing Company, First Street and Delaware Avenue, Vinita, Oklahoma, has issued Bulletin 5, describing and giving prices for its line of casing heads, tubing elevators, tubing tongs, combination rod oil saver, and stuffing box. Line drawings and photographs show features of the items.

Valve Positioner

Moore Products Company, 3629 North Lawrence Street, Philadelphia, has issued a data sheet on its valve positioner. The instrument is for diaphragm-operated valves, designed to provide for use of a by-pass valve as an interchangeable part of the unit.

Seamless Tubes

Babcock & Wilcox Tube Company, Beaver Falls, Pennsylvania, has issued Technical Data Card 107A, giving a revised list of standard specifications for seamless tubes and pipe, arranged in fingertip form.

Motorized Valves

The Brown Instrument Company, Wayne & Roberts Avenues, Philadelphia, has issued Catalog 77-1 on "Brown and Minneapolis-Honeywell Industrial Power Units and Motorized Valves." It describes a line of motor power units and motorized

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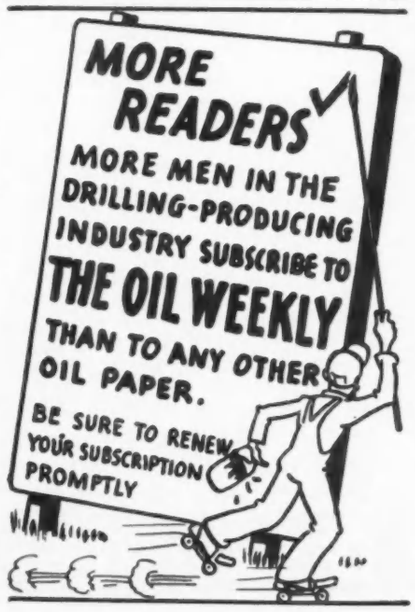
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valves designed to operate with Brown control instruments to form an important part of the control system. Photographs are shown of electric control motors, slip stem globe type, rotary stem globe type, butterfly type, pilot operated, three-way and special valves. Dimension tables and schematic diagrams show workmanship and operation.

Insulating Block

Armstrong Cork Company, Building Materials Division, Lancaster, Pennsylvania, has issued a folder on its Coprtex high-temperature insulating block. It contains a table and a chart comparing characteristics of the company's regular and its new high-strength block, and also gives information on Coprtex cement, block paste and asphaltic finishes.

Blowers

Roots-Connersville Blower Corporation, Connersville, Indiana, has issued Bulletin G-70, discussing briefly application of the company's complete line of products. Separate pages are devoted to positive displacement blowers, positive gas exhausters and boosters, centrifugal blowers and exhausters, and inert gas generators. The bulletin also includes a brief summary of the applications for which each type of equipment is suited, together with a list of more detailed bulletins available.

Metallizing

Metallizing Engineering Company, 21-07 Forty-first Avenue, Long Island City, New York, has issued Bulletin 42 giving 16 pages on "Metco Metallizing Equipment and the Metallizing Process." It describes applications in industry where the process can be advantageously used for rehabilitating worn shafts and other rotating machinery, as well as to protect metal surfaces against corrosion and other chemical attack. It also covers spraying guns and metallizing accessories.

LETTERS

Rumanian Enigma

DEAR SIR:

In the May 5 issue of THE OIL WEEKLY you asked, "Why haven't the British bombed the Rumanian oil fields and Refineries?" This question has been worrying me for some time, and in addition I wonder why the British do not concentrate their bombing on German refineries and oil works? Occasionally you will read in the paper where some bombing has been done, but it is not very often. I am of English descent and at the present very pro-British, and I am not fool enough to think that we can keep out of the war even if we wanted to. However, I think that we should know the answer to this question before we actually do any firing. In my own mind, I cannot help wondering if the failure to bomb is related to the fact that the English are supposed to own a big interest in Rumanian oil and in some of the German industries. All of us should know if anything like this is true if we are expected to do all we can to help them.

I hope that you can find the answer to these questions.

W. P. PARKER

The English have been bombing refineries in Germany, a plant at Hamburg being a special target. However, our reports are that bombing of refineries by either side has not been very successful. We have been told that English bombing of Rumanian plants would be more than ordinarily successful, because the exact location of such refineries and tank farms were better known to the British than, for example, the synthetic plants in Germany. We have no information as to why Rumanian refineries were not bombed.

Typographical Mixup

DEAR SIR:

On page 44 of THE OIL WEEKLY of April 21, in the second paragraph of your synopsis of the paper, "Underground Well Surveying, Directed Drilling, Side Wall Sampling and Polar Core Orientation," presented by G. L. Kothny, The Sperry-Sun Well Surveying Company, at the Eastern Division meeting of the American Petroleum Institute at Pittsburgh, I find these words:

"Surveying instruments may be pipe, and many 3000-inclinometers or clinographs recording inclination only, and the directional clinograph or direction well surveying instruments recording both inclination and direction of the hole."

What does this mean?

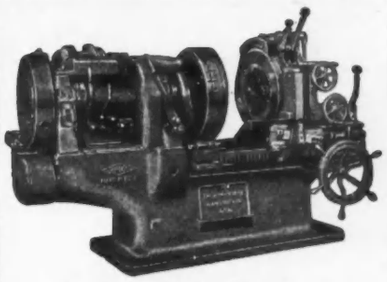
T.W.N.

Thanks for calling our attention to a transposition of lines in the synopsis of the paper by Mr. Kothny.

Of course, Mr. Kothny did not make the statement attributed to him in the paragraph you have quoted. The synopsis, as given to our printing department, had, instead, this paragraph:

"Surveying instruments may be classed into two types: inclinometers or clinographs recording inclination only, and the directional clinograph or direction well surveying instruments recording both inclination and direction of the hole."

What happened was that a line from the synopsis of the paper by Mr. Lager was transposed by the make-up man into the synopsis of the article by Mr. Kothny.



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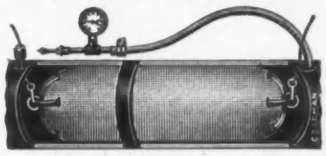

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